APPENDIX C

HERITAGE LABORATORIES, INC ANALYTICAL REPORTS

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC.	24-SEP-93	2586	A291069
901 W. MORRIS ST.	Complete	PO N	umber
INDIANAPOLIS, IN 46231	04-0CT-93	*****	
(317)243-8305	Printed	Samo	T
The state of the s	04-0CT-93	23-SEP-	93

Report To

Bill To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178

ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description

DESCRIPTION: WET GRINDING DUST

LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

Parameter Result Det. Limit Uni	TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 27-SEP-93		Test: G401.	
SOLIDS	Parameter	Result	Det. Limit	Units

TOX CHAR LEACHING PROCEDURE (TCLP METAL Analysis Cate: 27-SEP		Test: P106	.1.0
Parameter	Result	Det. Limit	Units
JTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	ļ NA		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100	4	Percent
9.5 MM SIEVE TEST	Samuel and the same of the sam		Passed
INITIAL PH	8,06		Std. Units
ADJUSTED PH	√2.49		Std. Units
BUFFER SOLUTION PH	4.92		Std. Units
FINAL PH	6.49		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10292.5		HRS
FINAL TIME	10310.4		HRS
PHASE O VOLUME (REP 0)	NA		mL
PHASE O WEIGHT	NA		Grams
PHASE O DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	ŇĀ		mL mL
PHASE 1 WEIGHT	NA NA		Grams
PHASE 1 DENSITY	NA NA		a/mŁ



FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Analyst: B. HAHN Analysis Date: 28-SEP-93 Test: P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0					
Parameter	Result	Det. Limit	Units		
INITIAL WEIGHT OR VOLUME	100		mL		
FINAL WEIGHT OR VOLUME	100		mE		

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 29-SEP-93 Instruments: Analysis Date: 29-SEP-93 Instruments: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (ICLP METALS ONLY) SW846-1311	ument: FAA P106.1.D	Test: M610.	5.0
Parameter	Result	Det. Limit	Units
CHROMIUM	0.50	0.05	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.500		Conc
SAMPLE + ADD 1	1.473		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

Sample chain of custody number 14997.

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Additional copies of this report sent to:
MARCIE HOROWITZ, BARNES & THORNBURG
1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204

Hellison

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC.	24-SEP-93	2586	A291070
/901 W. MORRIS ST.	Complete	PO N	umber
INDIANAPOLIS, IN 46231	04-0CT-93	********	*****
(317)243-8305	Printed	Samo	led
	04-0CT-93	23-SEP-	93

Report To

Bill To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178 ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description

DESCRIPTION: DRY DUST FROM DRY GRINDING

LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 27-SEP-93		Test: G401.7	7. 0
Parameter	Result	Det. Limit	Units
SOLIDS	100	0.001	Percent

Analyst: C. COFFEY Analysis Date: 27-SEP-93		Test: P106.1.0		
Parameter	Result	Det. Limit	បកាts	
STAL SAMPLE WEIGHT	100		Grams	
LIQUID FRACTION (GRAMS)	0		Grams	
EXTRACTED SAMPLE	100		Grams	
SOLIDS	100		Percent	
9.5 MM SIEVE TEST			Passed	
INITIAL PH	6.83		Std. Unit	
ADJUSTED PH	2.41		Std. Unit	
BUFFER SOLUTION PH	4.92		Std. Unit	
FINAL PH	6.36		Std. Unit	
VOLUME BUFFERED SOLUTION	2000		mL	
VOLUME EXTRACT FILTERED	2000		mL	
VOLUME LIQUID (ADD BACK)	0		mL	
TOTAL VOLUME FILTRATE	2000		mL	
AMBIENT TEMPERATURE	23		Degrees (
INITIAL TIME	10292.5		HRŠ	
FINAL TIME	10310.4		HRS	
PHASE O VOLUME (REP O)	NA NA		mL	
PHASE O WEIGHT	NA		Grams	
PHASE O DENSITY	NA		g/mL	
PHASE 1 VOLUME (REP 1)	NA		mL	
PHASE 1 WEIGHT	NA		Grams	
PHASE 1 DENSITY	NA .		q/mL	

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A				
Analyst: B. HAHN Analysis Date: 28-SEP-93		Tes	t: P130.8	-0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846*1311 P1	06.1.0			
	1	***********		
Parameter	Result	Det.	Limit	Units
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det.	Limit	Units mL

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 29-SEP-93 II Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130. Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1	8.0	Test: M610.	5.0
Parameter	Result	Det. Limit	Units
CHROMIUM ADDITION 1	0.20	0.05	mg/L
AUDI-TUN I	1,00		mg/L
SAMPLE + ADD 1	0.130		CONC

Sample Comments

NA Not Applicable

Sample chain of custody number 14997.

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Additional copies of this report sent to: MARCIE HOROWITZ, BARNES & THORNBURG 1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204

Kellison

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC.	06-0CT-93	2586	A292240
7901 W. MORRIS ST.	Complete	PO N	umber
INDIANAPOLIS, IN 46231	19-0CT-93	VER	BAL
(317)243-8305	Printed	Samp	led
	20-0CT-93	05-0CT-	93 14:40

Report To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178 Bill To

ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description

SAMPLE ID: 10-5A

DESCRIPTION: WET GRINDING DUST

LOCATION: LEVEL ONE REPORTING - STANDARD TAT

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis	Date: 07-001-93		Test: G401.7	·.0
Parameter	and the state of the second	Result	Det. Limit	Units
SOLIDS		84	0.001	Percent

TOX CHAR LEACHING PROCEDURE (TCLP METAL Analyst: C. COFFEY Analysis Date: 07-0CT		Test: P106	.1.0
Parameter TOTAL SAMPLE WEIGHT	Result 100	Det. Limit	Units Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	7.89		Std. Unit
ADJUSTED PH	2.93		Std. Unit
BUFFER SOLUTION PH	4.95		Std. Unit
FINAL PH	6.32		Std. Unit
VOLUME BUFFERED SOLUTION	2000		πL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10432.1		HRŠ
FINAL TIME	10449.0		HRS
PHASE O VOLUME (REP O)	NA NA		mL
PHASE O WEIGHT	NA.		Grams
PHASE O DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA NA		iniL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA NA		q/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: B. HAHN Analysis Date: 11-OCT-93		Test: P130.8	3.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P1	06.1.0		
Parameter	Result	Det. Limit	Units
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det. Limit	Units ML

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 15-OCT-93 Instrum Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P1		Test: M610.	5.0
Parameter	Result	Det. Limit	Units
CHROMIUM	0.94	0.050	mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.941		Conc
SAMPLE + ADD 1	1.918		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

Sample chain of custody number 9051.

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Kellian

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC.	06-0CT-93	2586	A292246
901 W. MORRIS ST.	Complete	PO N	umber
INDIANAPOLIS, IN 46231	19-0CT-93	VER	BAL
(317)243-8305	Printed	Samp	led
	20-0CT-93	05-0CT-	93 14:50

Report To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178 Bill To

ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description

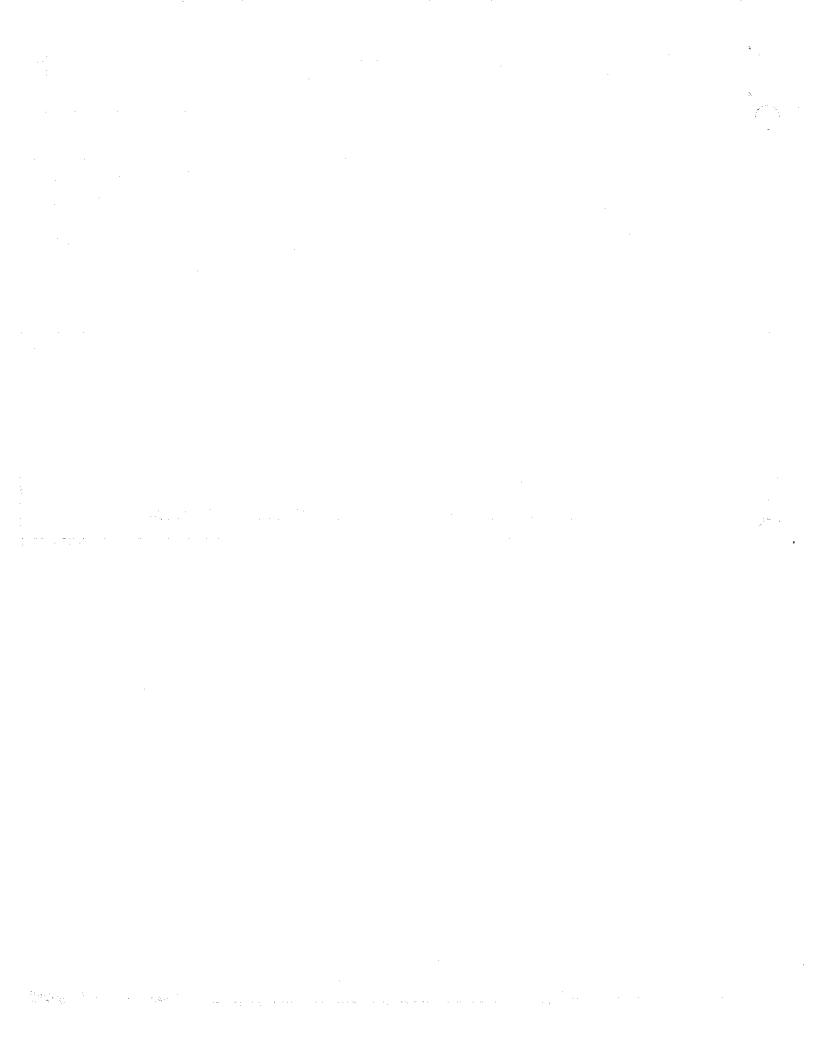
SAMPLE ID: 10-5B

DESCRIPTION: DRY GRINDING DUST

LOCATION: LEVEL ONE REPORTING - STANDARD TAT

TOTAL SOLIDS EPA 160 Analyst: 8. PRIDEMORE	Analysis Date: 07-001-93			Test: G401.7	7.0
SOLIDS	Parameter	100	Result	Det. Limit 0.001	Units Percent

		1	T .
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
IQUID FRACTION (GRAMS)	100		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	6.31		Std. Unit
ADJUSTED PH	2.42		Std. Unit
BUFFER SOLUTION PH	4.95		Std. Unit
FINAL PH	6.27		Std. Unit
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	10432.1		HRŠ
FINAL TIME	10449.0		HRS
PHASE O VOLUME (REP O)	NA		mL
PHASE O WEIGHT	NA		Grams
PHASE O DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA NA		a/mL



FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: B. HAHW Analysis Date: 11-OCT-93		Test: P130.8	3.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P1	06.1.0		
Parameter	Result	Det. Limit	Units
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det. Limit	Units ML

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 15-OCT-93 Instrum Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P1		Test: M610:5	i.O
Parameter CHROMIUM	Result	Det. Limit 0.050	Units mg/L
ADDITION 1	1.00		mg/L
SAMPLE	0.120		Conc
SAMPLE + ADD 1 DILUTION	1.151 1		Conc

Sample Comments

NA Not Applicable

Sample chain of custody number 9051.

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Killian

Service Location	Received	Project	Lab ID
MERITAGE LABORATORIES, INC.	14-0CT-93	2586	A293259
JO1 W. MORRIS ST.	Complete	PO N	umber
INDIANAPOLIS, IN 46231	25-0CT-93	VER	BAL
(317)243-8305	Printed	Samç	led
	26-0CT-93	14-OCT-	93 14:45

Report To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178 Bill To

ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description

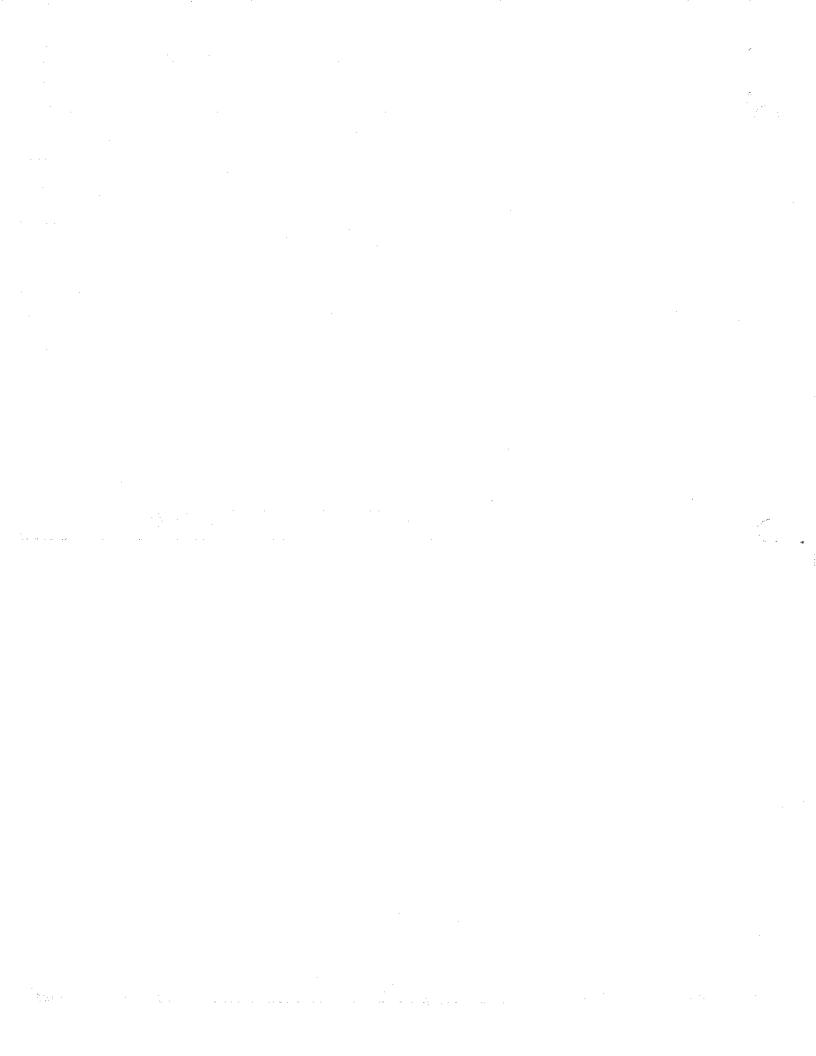
SAMPLE I.D.: 10-14A

DESCRIPTION: WET GRINDING DUST

LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN

TOTAL SOLIDS EPA 160.3 Analysis B. PRIDEMORE Analysis Date: 18-OCT-93		Test: G401.7	7.0
Parameter	Result	Det. Limit	Units
SOLIDS	96	0.001	Percent

*	8	B 4 1 2 7 5	T
Parameter TOTAL SAMPLE WEIGHT	Result 100	Det. Limit	Units Grams
LIQUID FRACTION (GRAMS)	100		Grams
EXTRACTED SAMPLE	100	***************************************	Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	7.57		Std. Uni
ADJUSTED PH	4.95		Std. Uni
BUFFER SOLUTION PH	4.92		Std. Uni
FINAL PH	6.02		Std. Uni
OLUME BUFFERED SOLUTION	2000		mL
OLUME EXTRACT FILTERED	2000		mL
OLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees
INITIAL TIME	10524.1		HRŠ
FINAL TIME	10540.7		HRS
PHASE O VOLUME (REP 0)	NA NA		mL
PHASE O WEIGHT	NA.		Grams
PHASE O DENSITY	NA NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA NA		Grams
PHASE 1 DENSITY	NA NA		q/mL



FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: R. BYERS Analysis Date: 20-0CT-93		Test: P130.8	3.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P	06.1.0		
Parameter	Result	Det. Limit	Units
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det. Limit	Units ML

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 21-0CT-93 Instruction (Leachate) SW846-3010A P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311		Test: M610	5.0
Parameter	Result	Det. Limit	Units
CHROMIUM	0.25	0.050	mg/L
ADDITION 1	1.0		mg/L
SAMPLE	0.245		Conc
SAMPLE + ADD 1	1.264		Conc
DILUTION	1		

Sample Comments

NA Not Applicable

Sample chain of custody number 13053.

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Additional copies of this report sent to:
MARCIE HOROWITZ, BARNES & THORNBURG
1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204

Delusa

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC.	14-0CT-93	2586	A293258
001 W. MORRIS ST.	Complete	PO N	umber
INDIANAPOLIS, IN 46231	25-0CT-93	VER	BAL
(317)243-8305	Printed	Samp	led
	26-0CT-93	14-0CT-	93 14:40

Report To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178 Bill To

ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Sample Description

SAMPLE I.D.: 10-14B
DESCRIPTION: DRY GRINDING DUST

LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 18-007-93		Test: G401.7.0
Parameter	Result	Det. Limit Units
SOLIDS	100	0.001 Percent

Analyst: C. COFFEY Analysis Date: 18-OCT-93		Test: P106.1.0		
Parameter	Result 100	Det. Limit	Units	
IOTAL SAMPLE WEIGHT			Grams	
LIQUID FRACTION (GRAMS)	0		Grams	
EXTRACTED SAMPLE	100		Grams	
SOLIDS	100		Percent	
9.5 MM SIEVE TEST	And the second		Passed	
INITIAL PH	6.84		Std. Uni	
ADJUSTED PH	2.71		Std. Unit	
BUFFER SOLUTION PH	4,92		Std. Uni	
FINAL PH	6.16		Std. Uni	
VOLUME BUFFERED SOLUTION	2000		mL	
VOLUME EXTRACT FILTERED	2000		mL	
VOLUME LIQUID (ADD BACK)	0		mL	
TOTAL VOLUME FILTRATE	2000		l mL	
AMBIENT TEMPERATURE	23		Degrees	
INITIAL TIME	10524.1		HRŠ	
FINAL TIME	10540.7		HRS	
PHASE O VOLUME (REP O)	NA NA		mL	
PHASE O WEIGHT	NA NA		Grams	
PHASE O DENSITY	NA		g/mL	
PHASE 1 VOLUME (REP 1)	NA.		mL	
PHASE 1 WEIGHT	NA NA		Grams	
PHASE 1 DENSITY	I ÑÃ		g/mL	

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: R. BYERS Analysis Date: 20-0CT-93		Test: P130.8	3.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 F	106.1.0		
Parameter	Result	Det. Limit	Units
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det. Limit	Units mL

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 21-OCT-93 Instrum Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P		Test: M610.	5.0
Parameter	Result 0.18	Det. Limit 0.050	Units ma/L
ADDITION 1 SAMPLE	1.0		mg/L Conc
SAMPLE + ADD 1	1.222		Conc

Sample Comments

NA Not Applicable

Sample chain of custody number 13053.

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Alluson

Service Location	Received	Project	Lab ID
''ERITAGE LABORATORIES, INC. 901 W. MORRIS ST.	22-0CT-93	2586	A293951
	Complete	PO Number	
INDIANAPOLIS, IN 46231	05-NOV-93	VERBAL	
(317)243-8305	Printed	Samp	led
	05-NOV-93	20-0CT-	93 15:13

Report To

JOHNIE R. BAKER SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178 ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Bill To

Sample Description

DESCRIPTION: WET GRINDING DUST

SAMPLE I.D.: 10-20A

LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 25	-001-93		Test: G401.7	7_0
Parameter		Result	Det. Limit	Units
SOLIDS	{	32	0.001	Percent

Analyst: C. COFFEY Analysis Date: 25-OCT-	ys	Test: P106	נו.ו.
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST	gov'ssalesamonto		Passed
INITIAL PH	8.41		Std. Unit
ADJUSTED PH	2.26		Std. Unit
BUFFER SOLUTION PH	4.95	***************************************	Std. Unit
FINAL PH	6.33		Std. Unit
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	12771.7		HRŠ
FINAL TIME	12788.1		HRS
PHASE O VOLUME (REP 0)	NA NA		mL
PHASE O WEIGHT	NA NA		Grams
PHASE O DENSITY	NA NA		g/mL
PHASE 1 VOLUME (REP 1)	NA.		mL
PHASE 1 WEIGHT	l NA		Grams
PHASE 1 DENSITY	NA		g/mL

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FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A			
Analyst: R. BYERS Analysis Date: 27-001-93		Test: P130.8	3.0
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P1	J6.1.0		
Parameter	Result	Det. Limit	Units
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det. Limit	Units ML

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 01-NOV-93 Instrume Prep: FAA OR 1CP ACID DIGESTION (LEACHATE) SW846-3010A P130,8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P10		Test: M610.	5.0
Parameter CHROMIUM	Result 0.054	Det. Limit 0.050	Units mg/l
ADDITION 1	1.00		mg/L
SAMPLE	0.054		Conc
DILUTION	1		LONG

Sample Comments

NA Not Applicable

Sample chain of custody number 13055.

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Additional copies of this report sent to: MARCIE HOROWITZ, BARNES & THORNBURG 1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204

Quality Assurance Officer:

H. a. Busch

Service Location	Received	Project	Lab ID
HERITAGE LABORATORIES, INC.	22-0CT-93	2586	A293956
901 W. MORRIS ST.	Complete	PO Number	
INDIANAPOLIS, IN 46231	05-NOV-93	VER	BAL
(317)243-8305	Printed	Sampled	
	05-NOV-93	20-0CT-	93 15:05

Report To

JOHNIE R. BAKER

ACCOUNTS PAYABLE BARNES & THORNBURG 11 SOUTH MERIDIAN

11 SOUTH MERIDIAN STREET 1313 MERCHANTS BANK BLDG INDIANAPOLIS, IN 46204

Bill To

SEACOR 8910 PURDUE ROAD SUITE 150 P.O. BOX 68178 INDIANAPOLIS, IN 46268-7178

Sample Description

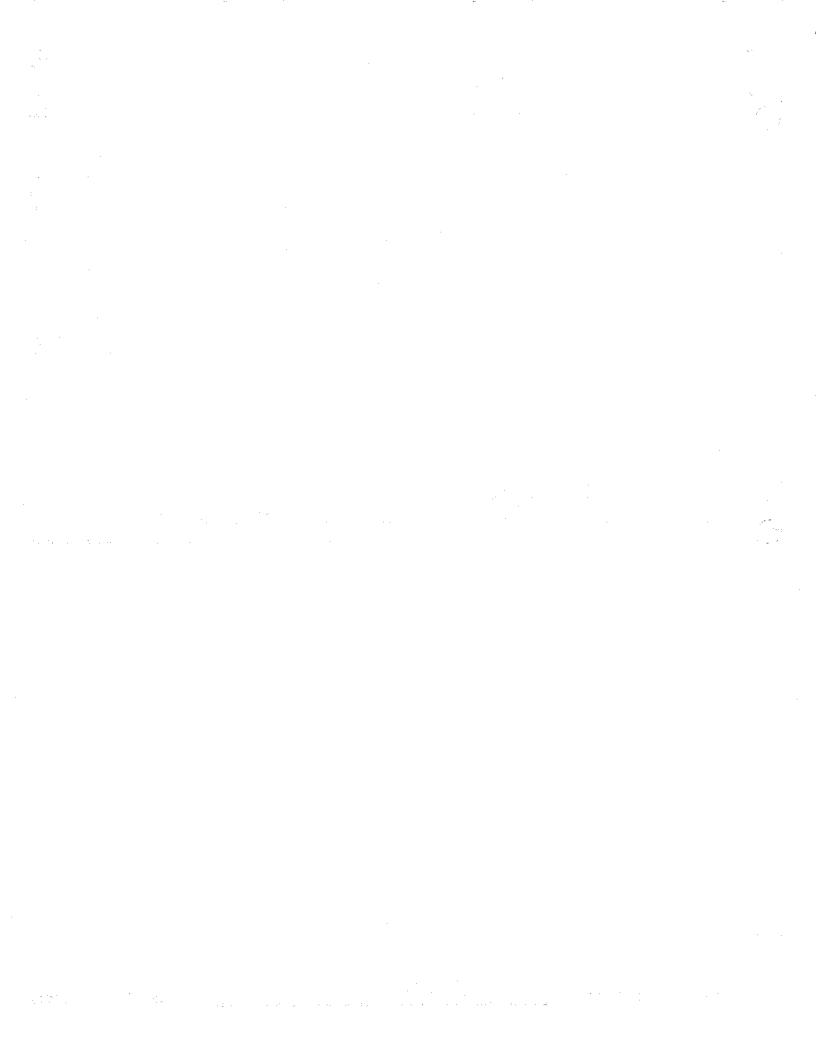
DESCRIPTION: DRY GRINDING DUST

SAMPLE I.D.: 10-20B

LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Dates	e: 25-00T-93		Test: G401.7	7.0
Parameter	100	Result	Det. Limit	Units
SOLIDS	100	· •	0.001	Percen

TOX CHAR LEACHING PROCEDURE (TCLP META Analysis Date: 25-OC		Test: P106	.1.0
Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100		Grams
LIQUID FRACTION (GRAMS)	0		Grams
EXTRACTED SAMPLE	. 100		Grams
SOLIDS	100		Percent
9.5 MM SIEVE TEST			Passed
INITIAL PH	6.40		Std. Unit
ADJUSTED PH	2.09		Std. Unit
BUFFER SOLUTION PH	4.95		Std. Unit
FINAL PH	6.05	***************************************	Std. Unit
VOLUME BUFFERED SOLUTION	2000		m
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	0		mL
TOTAL VOLUME FÎLTRATE	2000		mL
AMBIENT TEMPERATURE	23		Degrees C
INITIAL TIME	12771.7		HRS
FINAL TIME	12788.1		HRS
PHASE O VOLUME (REP 0)	NA NA	·····	mL
PHASE O WEIGHT	NA NA		Grams
PHASE O DENSITY	NA NA		g/mL
PHASE 1 VOLUME (REP 1)	NA NA		mL mL
PHASE 1 WEIGHT	NA NA		Grams
PHASE 1 DENSITY	I NA		arans a/mL



FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A					
Analyst: R. BYERS Analysis Date: 27-OCT-93		Test: P130.8	3.0		
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0					
Parameter	Result	Det. Limit	Units		
Parameter INITIAL WEIGHT OR VOLUME	Result 100	Det. Limit	Units mL		

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 01-HDV-93 Instrument: FAA Test: M610.5.0 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0 Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0				
Parameter	Result	Det. Limit	Units	
CHROMIUM	0.12	0.050	mg/L	
ADDITION 1	1.00		mg/L	
SAMPLE	0.120		Conc	
SAMPLE + ADD 1 DILUTION	1.140		Conc	

Sample Comments

NA Not Applicable

Sample chain of custody number 13055.

This Certificate shall not be reproduced, except in full, without the written approval of the lab.

Additional copies of this report sent to: MARCIE HOROWITZ, BARNES & THORNBURG

1313 MERCHANTS BANK BUILDING 11 SOUTH MERIDIAN STREET, INDIANAPOLIS, IN 46204

Quality Assurance Officer:

•			
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			f
			d.
•			
			:

APPENDIX D MATERIAL INFORMATION



MATERIAL SAFETY DATA SHEET

Flammability
Rating

Health
Rating

O

Reactivity
Rating

HAZARD RATING
Please rate consistent with NFPA Code

	S	ECTION I NAME	AND P	RODUCT			
MANUFACTURER'S NAME					CONT		
NORTON COMPANY					TH	OMAS Z. RICH	IARDS
ADDRESS (STREET, CITY, STATE AND ZIP C	•				EMER	RGENCY TELEPHONE N	10.
1 NEW BOND STREET, \		STER, MA 01615	-0008		508	3-795-2690	
TRADE NAME, COMMON NAME OR SPECIFIC				1e	APPR	IOVED BY	9~
VITRIFIED BONDED - AI	BRASIV	E PRODUCTS			DATE		
CHEMICAL FAMILY OR PRODUCT TYPE	ANY	GRADE	Water St. Line		3111		
SECT	IONII	COMPOSITION PE	ER 29C	FR 1910.12	200 (G) (4)		
CHEMICAL NAME	MAX %	COMMON NAME	REG* (Y/N)	CAS #	OSHA PERMISSIV EXPOSURE L		CARCIN OGEN (Y/N)
Alpha-Alumina —— OR —————————————————————————————————	96	Alundum, Seeded Gel	Y	1344-28-1	10mg/m³ (Total Dust	10mg/m³ (Total Dust)	N
Silicon Carbide	96	Crystolon	Y	409-21-2	10mg/m³ (Total Dust	10mg/m³) (Total Dust)	N
Sulfur Treatment	41	No. 22 Treat	Y	7704-34-9	**NAIF	**NAIF	N
Note: Wheel Treatment ranges from 21	to 41% cond	entration based on wheel w	eight.				
	SECTIO	N III PHYSICAL A	ND CH	HEMICAL D	έΔΤΔ		
30ILING POINT "NAIF		TING POINT "NAIF			SPECIFIC GRAVIT	Y 2-4	
/APOR PRESSURE **NAIF	PER	RCENT VOLATILE BY VOL "1	NAIF		VAPOR DENSITY	**NAIF	***************************************
EVAPORATION RATE "NAIF	SOL	UBILITY IN WATER Slight			SOLUBILITY IN AL	COHOL "NAIF	
SOLUBILITY IN OTHER SOLVENT "NAIF			PPEARANC	CE AND ODOR DUCT: MAY GIVE	OFF ODOR IN US	E.	
	SEC	CTION IV SPECIA	L PRE	CAUTIONS	,		
PRECAUTIONS TO BE TAKEN IN HANDLING OTHER PRECAUTIONS: **NAIF	AND STORAG	ge - NONE.					
SE	CTION	V CORROSIVITY	AND R	EACTIVITY	/ DATA		
STABILITY UNSTABLE X ST	ABLE	POLYMERIZ	ATION	MAY OC	CUR WILL	NOT OCCUR	
INC ATABILITY (MATERIALS TO AVOID)							
Avoid acids of all types with a	ı PH < = 4.0)					
ECOMPOSITION PRODUCTS	_ al: L	and an analysis of the second	-:	and the state of the	- M	a adaption of the fi	
In use, dusts are generated. In most case Coolants may produce other decompositi			a workbiec	e wiii de significal	nny greater than th	ie grinaing wheel ∞mp	xonents.

ONDITIONS TO BE AVOIDED

S	ECTION VI HEALTH, FIRST AID AND ME	DICAL DATA
.MARY ROUTE(S) _F ENTRY	ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE	FIRST AID AND MEDICAL INFORMATION
INHALATION Iring Grinding)	ACUTE: COUGHING, SHORTNESS OF BREATH. CHRONIC: MAY AFFECT BREATHING CAPACITY.	REMOVE TO FRESH AIR. ARTIFICIAL RESPIRATION AS NEEDED. OBTAIN MEDICAL ASSISTANCE.
INGESTION (During Grinding)	NO KNOWN ADVERSE EFFECTS, BUT INGESTION NOT RECOMMENDED.	OBTAIN MEDICAL ASSISTANCE.
SKIN (During CONTACT & Grinding) ABSORPTION	SOME MAY EXPERIENCE SKIN IRRITATION FROM DUST.	WASH AFFECTED AREAS WITH SOAP AND WATER. OBTAIN MEDICAL ASSISTANCE.
EYE (During Grinding)	DUSTS MAY IRRITATE EYES.	WASH WITH LARGE AMOUNTS OF WATER. > OBTAIN FIRST AID AND MEDICAL ASSISTANCE, IF NEEDED.
OTHER POTENTIAL HEALTH RISKS (During Grinding)	GRINDING MAY CREATE ELEVATED SOUND LEVELS WHICH MAY AFFECT HEARING AND MAY AGGRAVATE PREEXISTING RESPIRATORY CONDITIONS.	OBTAIN MEDICAL ASSISTANCE. THERE IS LIMITED INFORMATION THAT CRYSTALLINE SILICA IS A CARCINOGEN.

SECTION VII STORAGE, HANDLING AND USE PROCEDURES

NORMAL STORAGE AND HANDLING SEE ANSI STANDARD B7.1.

NORMAL USE

HANDLE WITH ADEQUATE VENTILATION. SEE OSHA 29CFR 1910.94 (VENTILATION) and 29CFR1910.1000 (AIR CONTAMINANTS)

STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS.

NORMAL CLEANUP PROCEDURES.

""STE DISPOSAL METHOD

ANDARD LANDFILL METHODS CONSISTENT WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS.

	SEC	TION VIII PERSONAL PROTECTION INFORMATION
RESPIRATORY		PECIFY TYPE) AS NEEDED. FOR APPROVED DUST RESPIRATORS SEE OSHA 29CFR 1910.134.
VENTILATION	LOCAL	RECOMMENDED
	MECHANICAL (GENERAL)	RECOMMENDED
	OTHER	**NAIF
PROTECTIVE G	LOVES	AS DESIRED BY USER
EYE PROTECTI	ON	RECOMMENDED SEE OSHA 29CFR 1910.133
OTHER EQUIPM	MENT	AS NEEDED HEARING PROTECTION SEE OSHA 29CFR 1910.95 (HEARING PROTECTION)
MEASURES TO WITH THIS MAT	BE TAKEN DURIN ERIAL.	G REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT
		SEE SECTION VII & VIII

	SECTION IX FIRE AND EXPL	LOSION HAZARD DATA
FLASH POINT **NAIF	METHOD USED ***N/A	FLAMMABLE LIMITS LEL N/A UEL ***N/A
F NGUISHING MEDIA	USE WATER	
SPECIAL FIRE FIGHTING	ROCEDURES NONE	
EXPLOSION POTENTIAL	**NAIF	

FOR COMPANY USE

The information and recommendations set forth herein are taken from sources believed to be accurate as of the date hereof; however, Norton Company makes no warranty with respect to the accuracy of the information or the suitability of the recommendations, and assumes no liability.

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105 South Keystone Ave. P.O. Box 11138 Indianapolis, Ind. 46201 317/638-4501

June 18, 1991

HOOSIER SPLINE 1401 Touby Pike Kokomo IN 46901 JUN 20 100

Subject: Hazardous Waste

Attention: Gilbert Larison

Mr. Gilbert Larison

Per our conversation concerning the percent of chrome in our material and the waste created from the material. In checking the certifications of the material we supply you, basically CPM-M4, the chrome content ranged from 3.82 to 4.02 with the majority being between 3.82/3.88.

This would indicate to us that the chrome content of the waste would be less than 4%. We hope this is the information you required.

Thank You,

Bob Eyer

Outside Sales Representative

BEyer/jkd

		·



******* <u>CERT</u>	IFICATE O	F ANALYSIS *****	
TO THE TOTAL PROPERTY OF THE CONTROL	M. 2	15/16 x 27/16 HOT ROLLED	HEAT # 26059
Description/Size: n.S.S. Alsi	110	7716	
•			
			/

HEAT NO.	TYPE	С	Si	Mn	Cr	Мо	W	V	Р	S	Со	Ni
26059	M-2	.87	-30	.27	4.25	4.78	6.05.	1.75	.024	.015		
												A CONTRACTOR OF THE PROPERTY O
					-		The state of the s	!				



* CERTIFICATE OF ANALYSIS *

Description/Size: H.S.S. AISI

M-2 15/16 x 15/16 HOT ROLLED JOB# 18,461 HEAT# H24360 M-3 TYPE I 3/4 x 15/16 HOT ROLLED JOB# 18,461 HEAT# H24360 M-3 TYPE I 3/4 x 13/16 HOT ROLLED JOB# 18,470 HEAT# Z399 M-2 13/16 + 19/16 HOT ROLLED JOB# 18,471 HEAT# G22788

							3				1	8	1
HEAT NO.	ТҮРЕ	С	Si	Mn	Cr	Мо	W	V	P	S	Со	Ni	K
H24212	m-2	,87	.30	,34	4.14	4.91	6.04.	1,96	.018	,005	.092	-13	./
Z399	M-3 TYPE I	1.07	.26	.26	4.08	4.98	6.17	2.36			.30		\ \ \
H24360	m-2	.83	-3/	.32	3.95	5.06	6.11	1.95	.016	,002	.//	13	
G22788	M-2	.87	.35	.31	3.97	4.93	6.19	1.93	.02/	.004	.17	.15	<u> </u>
		The state of the s					. •	·					



SUBSIDIARY OF THE TIMKEN COMPANY LATROBE, PENNSYLVANIA 15650 · AREA CODE 412 - 537-7711

Report Date: 01/09/92

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901 Your order number: JOB 19400

Branch Order No: 03-012-00830

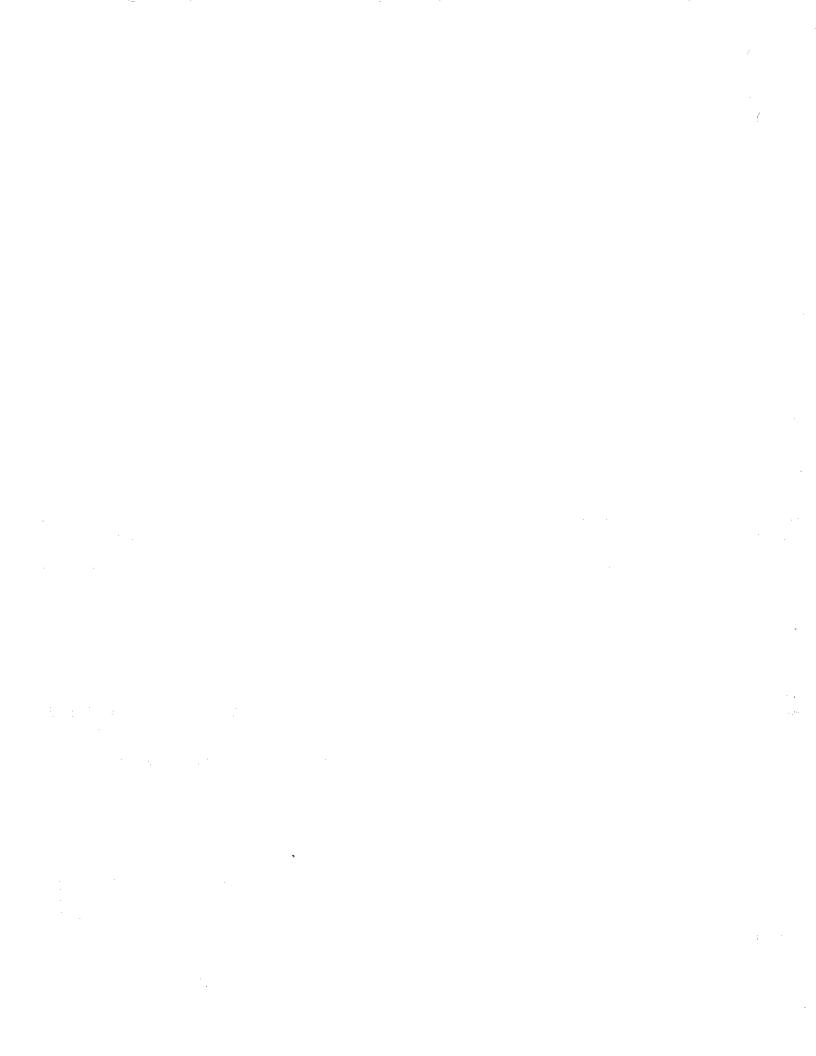
Mill Order Number:

Size: 7/8 X 1-1/2 Weight: 15

CERTIFICATE OF CHEMICAL ANALYSIS																
HEAT NUMBER	grade	aisi Type	-C	-SI-	-HN-	~S~~~	*P===	≈≈∰æ≈	CR-	V	NI-	MO-	CO-	-CU-	-AL-	-N2-
λ6115	D-SIX	H2	0.85	0.35	0.33	0.001	0.024	6.21	4.01	1.89	0.21	4.87	0.32	0.11		0.04

William A. Hill Supervisor - Test Submission and Certification

LATROBE STEEL COMPANY Inspection Department



MILL TEST REPORT

GRIGGS STEEL CO. 15431 W. ELEVEN MILE RD. DAK PARK, MI 48237

old To:

HOOSIER SPLINE BROACH

1401 TOUBY PIKE KOKOMO, IN 46903

OrigOrder# 009012

Indem Date 1/05/93

Desc

M-2 H.R. 1-5/16 X 1-11/16

Quantity

Themical Composition Heat# 21173 MN .29 C 34 SI .22 P .019 S 1001 CR 4.01 W 6.02 MO 4.95 V 1.87 CO

at Treatment of Test Specimen

Ruenching

Teheat Temp.

30

rearburization

GOOD

Temp. 1220

Cooling

OQ

empering

emp.

570

Time 60 MIN. Cooling AC

Repeat

Hardness 64..00

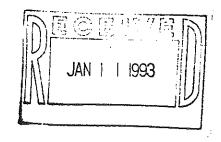
Microstructure

GOOD

Condition as Shipped

Hardness 229

.gned. **S. Chutolask** 20497



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			· !



SUBSIDIARY OF THE TIMKEN COMPANY
LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 02/09/90

HOOSIER SPLINE BROACH 1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: SEE BELOW

Branch Order No:

Mill Order Number:

Size: 2-1/8 RD

Weight: 55#

			CER	TIF	CAT	E OF	CHE	IICAI	ANA	LYSI	S					
HEAT NUMBER	GRADE	AISI TYPE	-C	-SI-	-MV-	-S	-P	W	CR-	V	NI-	HO-	CO-	-CU-	-AL-	-N2-
A6209	CORSAIR	M3-1	1.03	0.34	0.28	0.006	0.019	6.08	3.91	2.38	0.23	4.91	0.33	0.12	0.01	0.04

JOB 17262

William A. Hill Product Compliance Specialist

LATROBE STEEL COMPANY Inspection Department





****** CERTIFICATE OF ANALYSIS ****

Description/Size: H.S.S. AISI M-2 5/8×1/2 HOT ROLLED JOST 18,460 HEAT H

M-2 15/16 x 15/16 HOT ROLLED JOB# 18,461 HEAT # H24360 M-3 TYPE I 3/4 x 113/16 HOT ROLLED JOB# 18,470 HEAT # Z399

M-2 13/6+19/16 HOT ROLLED JOB#18,471 HEAT#G22788

HEAT NO.	TYPE	С	Si	Mn ,	Cr	Мо	W	V	Р	S	Со	Ni	CL
H24212	m-2	.87	.30	,34	4.14	4.91	6.04.	1,96	.018	,005	.092	<i>-13</i>	»/-
Z399	M-3 TYPE I	1.07	.26	.26	4.08	4.98	6.17	2.36			.30		~ ~
H24360	m-2	.83	-3/	.32	3.95	5.06	6-11	1,95	.016	,002	.11	.13	1
G22788	M-2	.87	.35	.31	3,97	4.93	6.19	1.93	.02/	.004	.17	./5	1/2
· · · · · · · · · · · · · · · · · ·													



SUBSIDIARY OF THE TIMKEN COMPANY
LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 ~ 537-7711

Report Date: 01/09/92

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: JOB 19405

Branch Order No: 05-012-00830

Mill Order Number:

Size: 1-1/2 X 1-5/8

Weight: 45

		-N	CER	TIFI	CAT		CHEM		ANA							
HEAT NUMBER	GRADE	AISI TYPE	~(^	-SI-	-HN-	~S~~~	-P	๛๛ โป๊๛๛	CR-	V	NI-	MO-	CO-	-CU-	-ÀL-	-N2-
A7147	CORSAIR	H3-1	1.01	0.31	0.26	0.014	0.023	5.94	3.90	2.33	0.22	4.91	0.33	0.11		0.04

William A. Hill Supervisor - Test Submission and Certification

LATROBE STEEL COMPANY Inspection Department



SUBSIDIARY OF THE TIMKEN COMPANY
LATROBE, PENNSYLVANIA 15650-3294 USA • 412-537-7711

Report Date: 01/12/93

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: JOB 20494

Branch Order No: 01-013-00540

Mill Order Number:

Size: 1-1/8 X 1-3/8

Weight: 8-1/2#

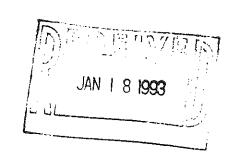
CERTIFICATE OF CHEMICAL ANALYSIS

HEAT	GRADE	AISI	-C	-SI-	-MN-	-S	-P	W	CR-	V	NI-	NO-	(0-	-CU-	-AL-	-N2-
λ6432	CORSAIR	M3-1	1.02	0.33	0.23	0.014	0.022	5.87	3.87	2.35	0.25	4.86	0.35	0.12		0.05

William A. Hill Supervisor - Test Sub. and Cert

LATROBE STEEL COMPANY Inspection Department

We cartify this material to have been manufactured, inspected and tasted in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a falony under federal statutes including Pederal Law, Title 18, Chapter 47.



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15431 W. ELEVEN MILE ROAD OAK PARK, MICHIGAN 48237

(313) 541-6226

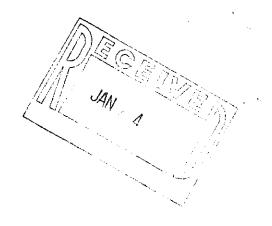
M-42 H.R. 7/8 X 1-1/2

622#

10-9-89

HEAT #X4120A

С	1.06
·Si	0.20
MN	0.25
CR	3.58
MO	9.03
W	1.41
V	1.05
CO	7.93
S	0.025
Р	0.022
ΝI	0.12



GRIGGS STEEL CO. 15431 W. Eleven Mile Oak Park, MI 48237 HIGH SPEED TOOL STEEL

TEST CERTIFICATE

FEB | 2 | 1991

HS NO. 7228.10.00303

DESCRIPTION

OTHER BARS OF COLD-FORMED HIGH-SPEED STEEL

RANDOM LENGTH

Material

Contract No.

M42

150307

Condition

ANNEALED

~	Sildicio	P3 13 13	HEMEED		÷						SEPT 1	1 89		Report Na	Dat
	Cas	e No		Size (()_	No of P	iece Weigh	t(LBS)	Heat No.	<u> </u>	, •				Month Day
6	5071			.562" 4.681MM	1)		43		40272		REG			M9070114	07 20
!	!	***************************************		(Chemical	Compos	sition	(%)							
	С	Si	i Mn	P	S	Ni	Cr	W	Mo	V	Co	ļ			
Spec	1.00	0.20		MAX 0.030	MAX 0.015		3.50	1.25		1.00	7.75 -8.25				
Result	1.08	0.32	0.25	0.022	0.002		3.62	1.35	9.40	1.03	7.91		}		
	Cc	ondition a	as Shipped						reatment	For Te	est Spec		·		Decarburi
	ļ				eneat		Quenchi			 		Tempe	ering ling Repe	·	
11	Hardn	iess '	Tensile Stre		emp. C ° C	Temp.	Tim	ne Cooling	Hardness	Ten	mp. 11			MESHRC	1
	HB =<269			°C	, ,			-			114	- 14	1.4.	67-70	
	255-260	0	· · · · · · · · · · · · · · · · · · ·	88	80 1200			ос		550	60	0 AC	3	68.8	GOOD
	Annealing		Microstru	ıcture	Mac	crostructure	e	Grain S	Size						
Link Link															
-															
ssult		ler	000				_	· -	Ι.						

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MILL TEST REPORT

GRIGGS STEEL CO.

15431 W. ELEVEN MILE RD.

OAK PARK, MI 48237

I ld To:

HOOSIER SPLINE BROACH

1401 TOUBY PIKE KOKOMO, IN 46903

OrigOrder# 009233

frder Date 1/12/93

Desc

M-42 D.F. 1.515" DIA.

Quantity

Chemical	Composition		Heat#	44433		. •		
	** **** **** **** **** **** **** **** ****		****					
007		0.29		0.30	P	0.022	S	0.002
CR 3.79	W	1.40		9.27 	•	1.12		7.87

Lat Treatment of Test Specimen

Ruenching

heat Temp.

5_.3

Temp.

1200

Cooling

OQ

npering

'emp.

(F.F.)

Time 60 MIN. Cooling

AC

Repeat

Hardness

68.00

ecarburization

GOOD

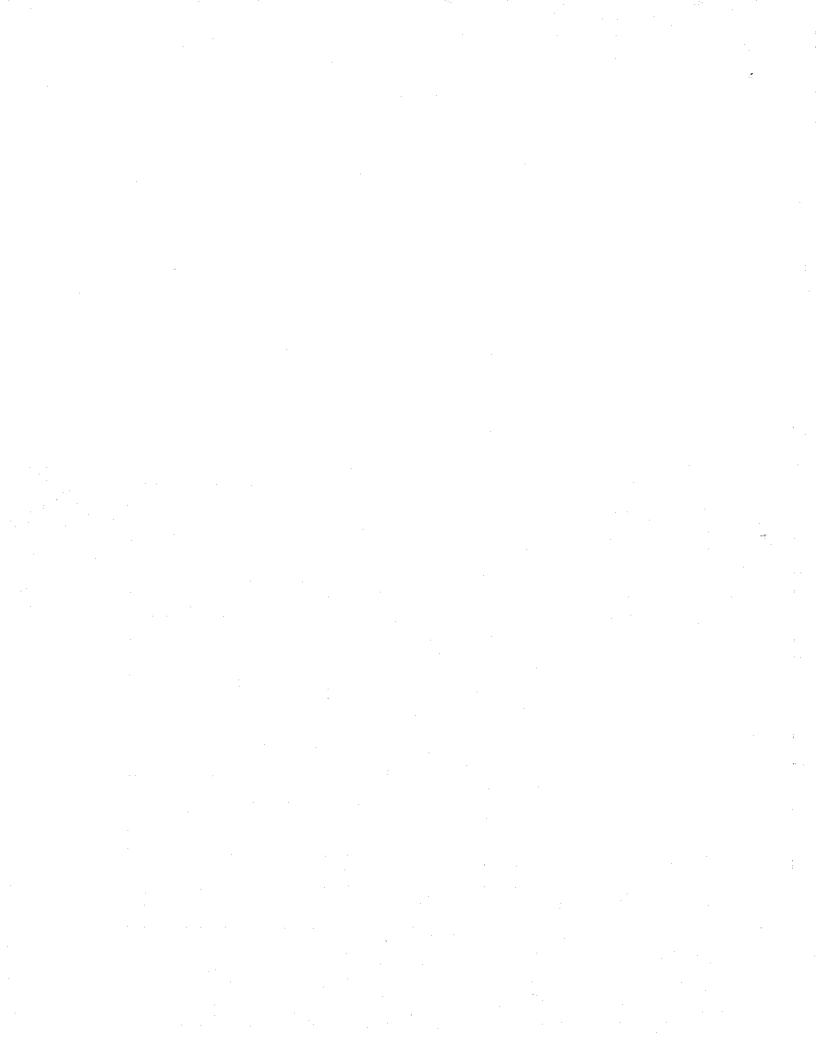
Microstructure

GOOD

Condition as Shipped

Hardness 241

ined. S. Chutolask...



GRIGGS STEEL CO. 15431 W. Eleven Mile Oak Park, MI 48237 HIGH SPEED TOOL STEEL

O TEST OF MILITARE

FFR + 6 1992

150964

HS NO 7.228:10:00606

DESCRIPTION OTHER BARS OF COLD-FORMED HIGH-SPEED STEEL RANDOM LENGTH

M42 daterial

Case Eu Size () Piece Weight LBS Heat Na Month Mo120045 12	Date
Case No. Size () B. of Piece Weight (LBS) Heat No. Month Mol 20045 12	
RB1-5/8"	Day Year 13 1990
9 838 428/4	
Chemical Composition (%)	
C Si Mi P S Ni Cr W Mo V Co RICO	
00 0.20 0.20 MAX MAX 3.50 1.25 9.00 1.00 7.75 FB 1 91	
1.10 -0.40 -0.40 0.030 0.015 -4.00 -1.75 -10.00 -1.50 -8.25	
07 0.31 0.29 0.018 0.002 3.36 1.51 9.24 1.13 7.82 NEV U	1
,07 0.31 0.27 0.010 0.002	carburization
lical Treatment For lest Specimen	.ar Burizutani
Tree it Time Colleg Repeat Hardness	
Hardness Tensile Streagth Tensile Streagth Tensile Streagth Times Committee	
1B = <269	
10 00 000	1
255 880 1200 OC 550 60 AC 3 88.0 600	·
We converge I Grain Size	
Annealing Test Microstructure Macrostructure Grain Size	
Annealing Test Microstruccure Macrostruccure Grain Size	
Annealing Test Alegorithmense Macrosimense Grain Size	
Annealing Test Alegernacture Macrofineance Grain Size Good Good Grain Size	



SUBSIDIARY OF THE TIMKEN COMPANY
LATROBE, PENNSYLVANIA 15650 • AREA CODE 412 - 537-7711

Report Date: 02/09/90

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901

Your order number: 17256

Branch Order No:

Mill Order Number:

Size: 1/2 X 1

Weight: 2#

CERTIFICATE OF CHEMICAL ANALYSIS																
HEAT NUMBER	GRADE	AISI Type	~(<u>`</u> ~~	-SI-	- <u> </u> -	-S	-P	₩	CR-	V==		MO-	co-	-CU-	-AL-	-N2-
G1734	STARK	M-4	1.38	0.30	0.38	0.07	0.017	5.45	4.30	3.90		4.50	0.39			0.04

JOB 17256

William A. Hill Product Compliance Specialist

LATROBE STEEL COMPANY Inspection Department

GRIGGS STEEL CO.

15431 W. Eleven Mile O. Park, MI 48237 HIGH SPEED TOOL STEEL

GOOD

2

Job: # 18537

TEST CERTIFICATE

Report No.		Dat	e.
	Month	Day	
M900862	7	14	

Messrs.

Contract No.

150781

Material

HAP-M4

CONDITION

HOT ROLLED & SPHEROIDIZED ANNEALED

FEB | 1991

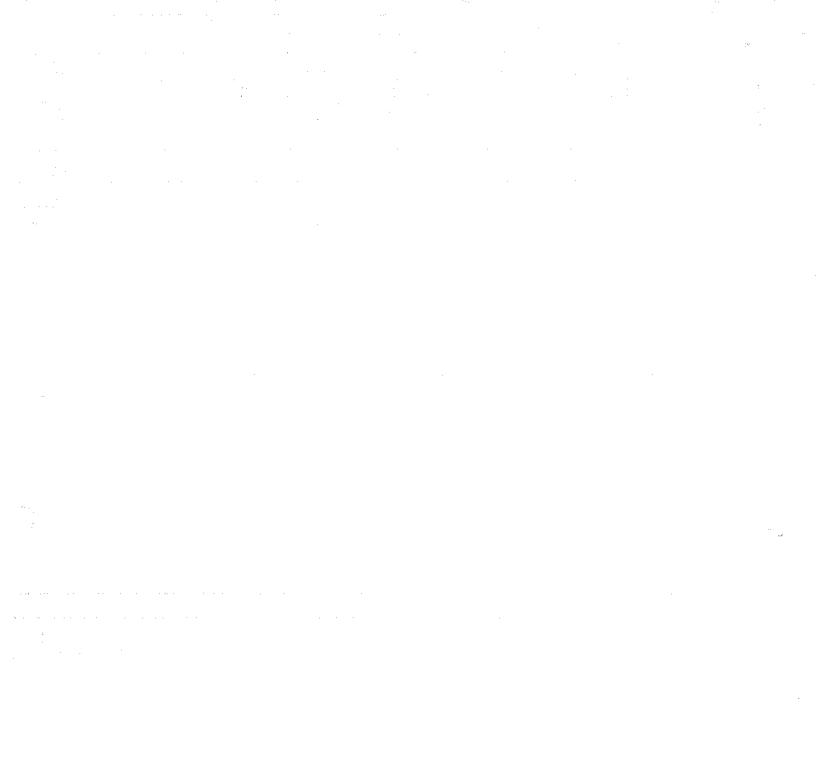
HS No.: 7228.10.001(

DESCRIPTION: OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH Na of Piece Heat No. Weight (LBS) (MM) Case No. Size (INCH.) H4072 233 : F28.575x44.45 1 2 3 F1-1/8"x1-3/4" 4090 · 6: 下了 · 5 元 11 11 11 11 (%) Composition Chemical Co W Мο Cr Νi Ŝi C Mn 0.26 4.61 4.06 4.06 5.88 0.005 0.31 0.016 1.38 0.30 Decarburization Treatment For Test Specimen Heat Hardness Tempering Quenching as Shipped Preheat Time Cooling Repeat Hardness Time | Cooling | Hardness Temp. Temp. Temp. HRC TIMES MIN °C °C HB °C 65.8 GOOD 2 AC 560 60 OC 1220 241 880 3 Grain Size Macrostructure Microstructure

NO.

13.0

GOOD



Specialty Metals MACUSE NEW YORK 13201

CERTIFICATE QF TEST

CRUCIBLE MATERIALS CORPORATION SPECIALTY METALS DIVISION 1701 PIEDMONT JY MI 48083

CRUCIBLE MATERIALS CORPORATION SPECIALTY METALS DIVISION

1201 PIEDMONT TROY MI 48083

JUR ORDER NO 33 05754 1

DATE

12/18/91

					1
CUSTOMER ORDER # & DATE	CUSTOMER REQ. #	DISTRICT	DETROIT	SHIPPED FROM	SYRACUSE
DESCRIPTION OF MATERIAL			SIZE		COMM CODE
CPM REY MA TE GA			1,390 RN		115 9028

p

AT NO. CHEMICAL ANALYSIS F C S SI MO P78817-2 MN CR W .35 .022 .070 .42 3.89 3.92 5.42 4.44 1.37

HEAT NO. MECHANICAL PROPERTIES OUANTITY

P78817-2 1537

HARDNESS BHN 229/ 241

MATERIAL FREE FROM MERCURY CONTAMINATION AT TIME OF SHIPMENT NO WELD REPAIR PERFORMED

SWORN TO AND SUBSCRIBED BEFORE ME THIS

_ DAY OF __

THANK YOU FOR SELECTING A QUALITY PRODUCT

MANUFACTURED BY THE EMPLOYEES OF CRUCIBLE SPECIALTY METALS MATERIAL MELTED IN U.S.A.

THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCUMENTH ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THE SPECIFICATION REQUIREMENTS.

CRICIBLE NATERIALS CORPORATION
ACTING BY AND THROUGH ITS SPECIALTY METALS DIVISION

CERTIFIED

QUALITY ASSURANCE REPRESENTATIVE

Crucible Service Centers A Divisor of Crucible Materials Corporation

5639 W. Genesee St. Camillus, NY 13031-0977

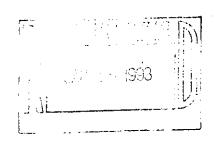
CERTIFICATE OF TEST

s			s			OUR ORDER NO.
0	HOOSIER SPLINE B	ROACH CORP	н Н	OOSIER SPLINE BROACH	CORP	46-11703
L	1401 TOUBY PIKE		I	•		40 77,00
D	P O BOX 538		.b 1	401 TOUBY PIKE		DATE
ī	KOKOMO	IN 46901	t F	KOKOMO IN 46901		
0			0	•	•	01/05/93
	CUSTOMER ORDER # & DATE	custo	OMER REQ. #	DISTRICT	SHIPPED	FROM
204	93 01/05/93			DETROIT	INDAP	OLS

DESCRIPTION OF MATERIAL
1 CPM M4 TFA .530 X 1.500

ITEM						MECHANIC	AL PROPERT	IES	
NO.	SIZE	QUANTITY	HEAT NO.	YIELD PSI	TENSILE PSI	XELONG IN.	XRED AREA	HARD- NESS	IMPACT
1	SEE ABOVE	1136#	P66094-1	•				BHN 255	

HEAT NO.						CHEMI		ERTIES					
P66094-1	C 1.40	MN 0.37	P 0.019	S 0.061	SI 0.54	NI	CR 3.87	V 3.92	ม 5.43	MO 5.14	CU	co	ÅL



THE ABOVE MATERIAL WAS MANUFACTURED AND TESTED IN ACCORDANCE WITH THE ABOVE SPECIFICATIONS AND IS IN CONFORMANCE WITH THOSE SPECIFICATION REQUIREMENTS.

CRUCIBLE MATERIALS CORPORATION

ACTING BY AND THROUGH &TS SERVICE CENTERS DIVISION

CERTIFIED BY:

Julie Anthony

QUALITY ASSURANCE REPRESENTATIVE



LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY LATROBE, PENNSYLVANIA 15650 · AREA CODE 412 - 537-7711

Report Date: 02/09/90

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538

KOKOMO,

IN 46901 Your order number: SEE BELOW

Branch Order No:

Mill Order Number:

Size: .3900 RD Weight: 2#

CERTIFICATE OF CHEMICAL ANALYSIS

HEAT NUMBER	GRADE	AISI TYPE	-C	-SI-	-MV-	-5	-p	W	CR-	V=-	NI-	MO-	00-	-CU-	-AL-	-N2-
G1821	T15	T15-PM	1.58	0.27	0.31	0.07	0.012	12.60	4.20	5.00	s, t+	0.14	5.05			0.04

JOB 17281

William A. Hill Product Compliance Specialist

LATROBE STEEL COMPANY Inspection Department

We certify this material to have been manufactured, inspected and tested in accordance with the methods prescribed by the governing specifications and order, and that the results conform with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statuates including Federal Law, Title 18, Chapter 47.

en de la composition La manda de la manda de la composition GRIGGS STEEL CO. 15431 W. Eleven Mile Oak Park, MI 48237 HIGH SPEED TOOL STEEL

TEST CERTIFICATE

JAN 1 0 1991

Ī	Report Na	Date						
		Month	Day	Year				
1	; M900877	7	17	1990				

Messrs.

Contract No.

150747

Material

HAP-T15

CONDITION

HOT ROLLED & SPHEROIDIZED ANNEALED

HS No.: 7228.10.00107

DESCRIPTION : OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH

	I	DESCRIPTION: OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH																
		Ca.	se Na	Ī	Size (I)	NCH)	9	(MM)		Na of Piece	Weight	(LBS)		at No.		CEDE . C	0.0	
1	+	4)	.23		F1-1/16"		:	F26.9882	33.338	4	273		H4	4041		SEM 112	90	
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3	1									<u> </u>			<u> </u>					
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N	Τ																	,
11	٨						<u> </u>	1	122.00	 	4.99	5.0	20 1	· · · · · · · · · · · · · · · · · · ·				/
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2				<u> </u>			ļ <u>.</u>											
3	1					<u> </u>	<u> </u>	1		est Specin						Dec	arburiz	ation
	Hardness						realme	nt For 1	est Specia	Теп	nperin	7						
	_	as Shipped Preheat Quenc			hing	oling Hard	2000	Temp.		Time	Cooling	Repeat	Hardness					
Š	Y-	715		l'emp.	Temp		l ime ic	ottug 11410	iness	°C		MIN		TIMES				
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1-2				i			i									•		



19897

GRIGGS STEEL CO.

11 11 W. Eleven Mile Can Park, MI 48237. HIGH SPEED TOOL STEEL

TEST CERTIFICATE

 Report
 No.
 Date

 Month
 Day
 Year

 M910029
 1
 18
 1991

Messrs

Contract No.

150949

Material

HAP-T15

CONDITION

HOT ROLLED & SPHEROIDIZED ANNEALED

HS No.: 7228.10.00107

DESCRIPTION: OTHER BARS OF HOT-ROLLED HIGH-SPEED STEEL IN RANDOM LENGTH Case Na Size (INCH) (MM) Na of Piece Weight (LBS) Heat No. F13/16"x1-13/16" 4521 : F20.638x46.038 255 H4431 Chemical Composition (%) С Mn Ni CrМο Co 1.56 0.30 0.30 0.019 0.002 3.97 11.90 1.21 4.88 5.04 Hardness Heat Treatment For Test Specimen Decarburization as Shipped Preheat Tempering . Quenching Time Cooling Hardness Temp. Temp. Temp. Time Cooling Repeat Hardness HB °C .C MIN TIMES HRC 269 880 1240 OC 560 60 AC 67.0 GOOD Microstructure Macrostructure Grain Size NO. 1 GOOD GOOD 14.2 3



LATROBE STEEL COMPANY

SUBSIDIARY OF THE TIMKEN COMPANY LATROBE, PENNSYLVANIA 15650-3294 USA • 412-537-7711

Report Date: 01/15/93

HOOSIER SPLINE BROACH

1401 TOUBY PIKE

P.O. BOX 538 KOKOMO,

IN 46901

Your order number: JOB 20498

Branch Order No: 03-013-02130

Mill Order Number:

Size: 1.1400 RD

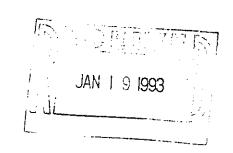
Weight: 44#

			CER	TIF	CAT	E OF	CHE	IICAL	ANA	S				
HRAT G1928	GRADE T15 PM	AISI T15			-NN- 0.32			W 12.24			NO- 0.20		-AL-	-N2- 0.02

William A. Hill Supervisor - Test Sub. and Cert

LATROBE STEEL COMPANY Inspection Department

We certify this material to have been manufactured, inspected and tasted in accordance with the methods prescribed by the governing specifications and order, and that the results confers with the applicable requirements. The recording of false, fictitious or fraudulent statements or entries on this document may be punished as a felony under federal statutes including Federal Law, Title 18, Chapter 47.



MANUFACTURER'S NAME:

1. PRODUCT IDENTIFICATION



KONCOR INDUSTRIES DIVISION OF LATROBE STEEL COMPANY SUBSIDIARY OF THE TIMKEN COMPANY Wauseon, Ohio 43567 AREA CODE 419-335-8010

TRADE NAME: LESCO M-4 PM **GRADE SPECIFICATION DATE:** 12/04/89 MSDS REVISION DATE 02/89

- HOOSIER SPLINE BROACH CORP
- · 1401 TOUBY PIKE
- P O BOX 538
- KOKOMO

IN 46903

CIA Alcund a 1991

II. HAZARDOUS INGREDIENTS									
MATERIAL OR COMPONENT	CAS NO.	PERCENT	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³)					
CARBON	7440-44-0	1.28	35	3.5					
CHROMIUM	7440-47-3	4.50	0.5	•50 *					
IRON	1309-37-1	GT 50	10.0	5					
MOLYBDENUM	7439-98-7	4.50	10.0 TOTAL DUST	10					
VANADIUM	1314-62-1	4.00	5.0 RESP. FRACT 0.05 (DUST) 0.05 (FUME)	.05 *					
TUNGSTEN	7440-33-7	550	5 ₋ 0	5					

* REGULATED AS A TOXIC CHEMICAL UNDER SECTION 313, SARA TITLE III AND 40 CFR 372 III. PHYSICAL DATA

BOILING POINT:

SPECIFIC GRAVITY (H2O=1):

% VOLATILES BY VOLUME:

APPEARANCE AND ODOR:

VAPOR DENSITY (AIR=I):

≥ 5000°F

Approx. 7.8-8.2 (60°F)

Odorless Metal

N/A N/A

Various Shapes, Solid

MELTING POINT: VAPOR PRESSURE: SOLUBILITY IN H2O:

EVAPORATION (BUTYL ACETATE=1):

Approximately 2500°F

N/A Insoluble N/A

IV. FIRE AND EXPLOSION DATA

FLASH POINT:

None

FIRE POINT:

None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:

Inhalation - Eye Contact - Skin Contact -Ingestion

EMERGENCY FIRST AID:

Remove to fresh air, if condition continues - consult physician

Flush well with running water to remove particulate. Get medical attention. Brush off excess dust. Wash area well with soap and water.

Seek medical help if large quantities of material have been ingested.

EFFECTS OF OVEREXPOSURE:

ACUTE: Short term overexposure to the dust, fumes and/or oxides of certain components of steel products may cause irritation of the eyes, nose or throat; or, may result in metal fume fever characterized by a metallic or sweet taste, dryness and irritation of the throat, wheezing, discoloration of the tongue and flue-like symptoms.

CHRONIC: Excessive and prolonged overexposure to the dust fumes and/or oxides of certain components of steel products may result in chronic interstitial pneumonitis, discoloration of the skin and hair; allergic bronchitis, neoplasms or loss of coordination and balance.

REFER TO PAGE 2 FOR THE EFFECTS OF OVEREXPOSURE TO SPECIFIC ELEMENTS

EFFECTS OF OVEREXPOSURE CONT'D.:

CARBON (C) — Irritation of eyes and mucous membranes.

MANGANESE (Mn) — Irritation of eyes, nose and throat; metallic taste in the mouth; acute pneumonia and pneumonitis (respiratory

IRON (Fe) - Irritation of eyes, nose and throat; metal fume fever.

CHROMIUM (Cr) - Irritation of eyes and mucous membranes, dermatitis, skin ulcers and nasal septum perforation.

NICKEL (Ni) — Irritation of eyes and mucous membranes, dermatitis, "nickel itch", pulmonary edema, asthma, headache and vomiting.

MOLYBDENUM (Mo) - Irritation of eyes and mucous membranes.

VANADIUM (V) — As vanadium pentoxide dust or fumes, it may cause irritation of eyes, nose and respiratory tract.

ALUMINUM (Al) — Possible irritation of eyes and mucous membranes.

COBALT (Co) - Irritation of eyes and mucous membranes.

COPPER (Cu) - Irritation of eyes, nose and throat, metal fume fever.

BORON (B) - Irritation of nose and throat.

TANTALUM (Ta) - Dust may cause slight irritation to eyes, nose and throat.

TITANIUM (Ti) — Considered a physiologically inert dust; however, high concentrations may cause irritation of eyes and mucous membranes

TUNGSTEN (W) - No adverse health effects have been reported in humans.

CHRONIC:

CARBON (C) -- Irritation of eyes and mucous membranes.

MANGANESE (Mn) — Inhalation of fumes and dust can cause central nervous system disturbances, increased upper respiratory disorders and infections, cumulative lung damage, psychiatric disorders, liver cirrosis and anemia.

IRON (Fe) — Inhalation of iron oxide fumes and dust may cause chronic bronchitis, conjunctivitis, choroiditis, retinitis and siderosis of tissues.

CHROMIUM (Cr) — The toxicity and health hazards of chromium are heavily dependent upon its oxidation state. Trivalent and devalent chromium, as in chromium metal and chromium-containing alloys have a low order of toxicity. The hexavalent form (chromates and chromic acids) may cause irritant and allergic contact-dermatitis, skin ulcers and nasal irritation varying from rhinitis to perforation of the nasal septum. Reported carcinogen. Γ. -

NICKEL (Ni) — Nickel dust or fume can cause sensitization dermatitis, "nickeLitch", and may cause cancer of the paranasal sinuses and lungs.

MOLYBDENUM (Mo) — Human industrial poisoning by molybdenum has yet to be reported.

VANADIUM (V) — As vanadium pentoxide dust or fumes, it may cause irritation of eyes, nose and respiratory tract (More severe than acute exposure), chronic bronchitis and allergic skin rash.

ALUMINUM (AI) — Possible irritation of eyes and mucous membranes. Reported as a cause of pulmonary fibrosis.

COBALT (Co) - May cause allergic skin rashes and respiratory disease.

COPPER (Cu) - Skin irritation; discoloration of the skin or the hair and metal fume fever.

BORON (B) — Possible irritation of the respiratory tract and nose bleeds.

TANTALUM (Ta) — Dust may be slight irritant to eyes, nose and throat.

TITANIUM (Ti) — Considered a physiologically inert dust; however, high concentrations may cause irritation of eyes and mucous membranes.

TUNGSTEN (W) - No adverse health effects have been reported in humans.

CARCINOGENICITY:

CHROMIUM (Cr) NICKEL (Ni)	NTP YES YES		IARC MONOGRAPHS YES YES	OSHA REGULATED YES, PEL established YES, PEL established
		VI. RE	ACTIVITY DATA	
STABILITY: INCOMPATIBILITY: HAZARDOUS DECOMPOSITION	I PRODUCTS:	React	ically Stable s with Strong Acids to Gene lic Oxides	rate Hydrogen Gas
	VII. S	PILL O	R LEAK PROCEDURE	S
STEPS TO BE TAKEN IN CASE WASTE DISPOSAL METHOD	OF RELEASE OR	SPILL	N/A Solids — Sale as Scrap Dust, etc. — Follow Federa Disposa	al, State and Local Regulations Regarding

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General — Recommended. Local — As Required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended. As required.

Gloves:

As required.

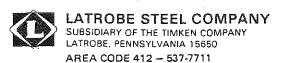
Other Clothing or Equipment:

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRA-TIONS AT A MINIMUM.

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION



TRADE NAME: CORSAIR XL (M-3 TYPE-1XL) 03/13/86 GRADE SPECIFICATION DATE: _

II. HAZARDOUS INGREDIENTS									
MATERIAL OR COMPONENT	CAS NO.	OSHA PEL <u>(Mg/M³)</u>	ACGIH TLV (Mg/M ³)						
CHROMIUM	7440-47-3	1.0	a 50						
IRON	1309-37-1	10	<u>.</u>						
MOLYBDENUM	7439-98-7	15	- 10						
VANADIUM	1314-62-1	(DUST) .5¢	⊕ 0 €						
		(FUME) .10	• 0 5						
TUNGSTEN	7440-33-7	N/E**	\$						

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON OON/E NOT **ESTABLISHED** CEILING LINITS

III. PHYSICAL DATA

BOILING POINT:

SPECIFIC GRAVITY (H20=1): VAPOR DENSITY (AIR=I):

% VOLATILES BY VOLUME:

APPEARANCE AND ODOR:

≥5000°F

Approx. 7.8-8.2 (60°F)

N/A

N/A

Various Shapes, Solid **Odorless Metal**

MELTING POINT:

VAPOR PRESSURE: SOLUBILITY IN H2O:

EVAPORATION (BUTYL ACETATE=1):

Approximately 2500°F

N/A Insoluble N/A

IV. FIRE AND EXPLOSION DATA

FLASH POINT:

None

FIRE POINT:

None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:

Inhalation

EMERGENCY FIRST AID:

Remove to fresh air, if condition continues -

consult physician

Flush well with running water to remove particulate. Get medical attention. Brush off excess dust. Wash area well with

soap and water.

Seek medical help if large quantities of material have been ingested.

Eye Contact

Skin Contact

Ingestion

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

VI. REACTIVITY DATA

STABILITY:

Chemically Stable

INCOMPATIBILITY:

Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS DECOMPOSITION PRODUCTS:

Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

Solids — Sale as Scrap

Dust, etc. - Follow Federal, State and Local Regulations Regarding

Disposal:

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General - Recommended.

Local - As Required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If fumes, misting or dust condition occurs and TLV as indicated in Section II is

exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended,

Gloves:

As required.

Other Clothing or Equipment:

As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION



LATROBE STEEL COMPANY SUBSIDIARY OF THE TIMKEN COMPANY LATROBE, PENNSYLVANIA 15650 AREA CODE 412 - 537-7711

TRADE NAME: DOUBLE SIX (M-2)

03/13/86 GRADE SPECIFICATION DATE: ..

NFC 1 6 1990

11.	HAZ	ARDOL	JS :	INGR	ED.	ENT:	S

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M³)	ACGIH TLV (Mg/M ³)
CHROMIUM	7440-47-3	1.0	•50
IRDN	1309-37-1	10	5
MOLYBDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .50	• 05
•		(FUME) .10	_e 05
TUNGSTEN	7440-33-7	N/E¢¢	5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON

OON/E NOT ESTABLISHED GEILING LIMITS III. PHYSICAL DATA

BOILING POINT:

SPECIFIC GRAVITY (H2O=1):

VAPOR DENSITY (AIR=I): % VOLATILES BY VOLUME:

APPEARANCE AND ODOR:

≥5000°F

Approx. 7.8-8.2 (60°F)

N/A

N/A

Various Shapes, Solid Odorless Metal

MELTING POINT:

VAPOR PRESSURE: SOLUBILITY IN H2O:

EVAPORATION (BUTYL ACETATE=1):

Approximately 2500°F

N/A

Insoluble

N/A

IV. FIRE AND EXPLOSION DATA

FLASH POINT:

None

FIRE POINT:

None

V. HEALTH HAZARD INFORMATION

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PRIMARY ROUTES OF ENTRY:

Inhalation

EMERGENCY FIRST AID:

Remove to fresh air, if condition continues -

Eye Contact

Flush well with running water to remove particulate. Get medical attention. Brush off excess dust. Wash area well with

soap and water.

consult physician

Seek medical help if large quantities of material have been ingested.

Ingestion

Skin Contact

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

VI. REACTIVITY DATA

STABILITY:

Chemically Stable

INCOMPATIBILITY:

Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS DECOMPOSITION PRODUCTS:

Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

Solids — Sale as Scrap

Dust, etc. — Follow Federal, State and Local Regulations Regarding

Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General - Recommended.

Local - As Required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If fumes, misting or dust condition occurs and TLV as indicated in Section II is

exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended.

Gloves:

As required.

Other Clothing or Equipment:

As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION



LATROBE STEEL COMPANY SUBSIDIARY OF THE TIMKEN COMPANY LATROBE, PENNSYLVANIA 15650 AREA CODE 412 - 537-7711

TRADE NAME: DYNAMAX (H-42)

GRADE SPECIFICATION DATE:.

03/13/86

DEC 1 8 1990

II. HAZARDOUS INGREDIENTS				
MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M³)	
COBALT	7440-48-4	0.1	(0.1)	
CHROMIUM	7440-47-3	1.0	. 50	
IRON	1309-37-1	10		
MOLYBDENUM	7439-98-7	15	I (
VANADIUM	1314-62-1	(DUST) .5* ··	• 0 5	
		(FUME) .1*	• 0 5	
TUNGSTEN	7440-33-7	N/E * *		

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON NOT ESTABLISHED **N/E -CEILING-LIMITS-

III. PHYSICAL DATA

BOILING POINT: SPECIFIC GRAVITY (H2O=1): ≥5000°F Approx. 7.8-8.2 (60°F) **MELTING POINT: VAPOR PRESSURE:** Approximately 2500°F

VAPOR DENSITY (AIR=I): % VOLATILES BY VOLUME: N/A

SOLUBILITY IN H2O:

N/A Insoluble

APPEARANCE AND ODOR:

N/A

EVAPORATION (BUTYL ACETATE=1):

N/A

Various Shapes, Solid Odorless Metal

IV. FIRE AND EXPLOSION DATA

FLASH POINT:

None

FIRE POINT:

None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:

Inhalation

EMERGENCY FIRST AID: Remove to fresh air, if condition continues -

consult physician

Flush well with running water to remove Eye Contact particulate. Get medical attention.

Brush off excess dust. Wash area well with

soap and water.

Seek medical help if large quantities of material have been ingested.

Ingestion

Skin Contact

Form No. 20147

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobalt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume fever and, in some instances, discoloration of skin and hair.

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous system damage.

MOLYBDENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental mode of exposure routes.

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes, nose and throat.

VI. REACTIVITY DATA

STABILITY:

Chemically Stable

INCOMPATIBILITY:

Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS DECOMPOSITION PRODUCTS:

Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

Solids - Sale as Scrap

Dust, etc. — Follow Federal, State and Local Regulations Regarding

Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General - Recommended.

Local — As Required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If fumes, misting or dust condition occurs and TLV as indicated in Section II is

exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended.

Gloves:

As required.

Other Clothing or Equipment:

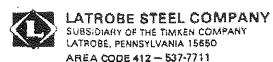
As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION



TRADE	NAME: LESCO	H-4 PH		•
, , , ten		Department Department	****	Control of the last of the las
GRADE	SPECIFICATION	DATE:	02/22/88	

DEC | 8 1990

	II. HAZARDOUS	INGREDIENTS	•
MATERIAL OR COMPONENT	CAS NO.	OSHA . PEL (Mg/M ³)	ACGIH TLV (Mg/M³)
CHROMIUM	7440-47-3	1.0	•50
IRON	1309-37-1	10	5
MULABDENUM	7439-98-7	15	10
VANADIUM	1314-62-1	(DUST) .5*	• 05
		(FUME) .1*	±0 5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON * CFTI ING I TMITS **N/F - NOT ESTABLISHED

111. PH	IYSICAL	DATA
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BOILING POINT:

SPECIFIC GRAVITY (H2O=1):

VAPOR DENSITY (AIR-I): % VOLATILES BY VOLUME:

APPEARANCE AND ODOR:

≥5000°F

Approx. 7.8-8.2 (60°F)

N/A

N/A

Various Shapes, Solid Odorless Metal

MELTING POINT:

VAPOR PRESSURE: SOLUBILITY IN HOO:

EVAPORATION (BUTYL ACETATE=1):

Approximately 2500°F

N/A

Insoluble N/A

IV. FIRE AND EXPLOSION DATA

FLASH POINT:

None

FIRE POINT:

None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:

Inhalation

EMERGENCY FIRST AID:

Remove to fresh air, if condition continues -

consult physician

Flush well with running water to remove particulate. Get medical attention. Brush off excess dust. Wash area well with

Seek medical halp if large quantities of material have been ingested.

Eye Contact

Skin Contact

Ingestion

Form No. 20147 85/03/21

soab and water.

BORON is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobelt.

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

COPPER may cause metal fume fever from breathing excessive amounts of copper dust or fumes. Health effects consist of Irritation of the upper respiratory tract, metallic or sweet taste, nausea, metal fume faver and, in some instances, discoloration of skin

IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 mg/M³ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous

MOLYBBENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of exides can cause mechanical irritation of eyes,

TUNGSTEN is not generally regarded as an industrial poison, however no dust when inhaled in sufficient amounts is completely iner

VI. REACTIVITY DATA

STABILITY:

Chamically Stable

INCOMPATIBILITY:

Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS_DECOMPOSITION PRODUCTS:

Métallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

- Sale as Scrap

Dust, etc. — Follow Federal, State and Local Regulations Regarding

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General - Recommended.

Local - As Required.

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

If fumes, misting or dust condition occurs and TLV as indicated in Section II is

exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended.

Gloves:

As required.

Other Clothing or Equipment:

As required,

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CON-CENTRATIONS AT A MINIMUM.

MANUFACTURER'S NAME:

I. PRODUCT IDENTIFICATION



LATROBE STEEL COMPANY SUBSIDIARY OF THE TIMKEN COMPANY LATROBE, PENNSYLVANIA 15650 AREA CODE 412 - 537-7711

TRADE NAME: LESCO T-15 PM

GRADE SPECIFICATION DATE:_

97/11/88

DEC | 8 1990

MATERIAL OR COMPONENT	CAS NO.	OSHA PEL (Mg/M ³)	ACGIH TLV (Mg/M ³
COBALT	7440-48-4	0.1	(0.1)
CHROMIUM	7440-47-3	1.0	∞ 5Q
IRON	1309-37-1	10	5
HULYBDENUH	7439-98-7	15	10
VANADI UM	1314-62-1	(DUST) •5*	# O5
		(FUME) .1*	.05
TUNGSTEN	7440-33-7	N/E**	5

TUNGSTEN IS NOT GENERALLY REGARDED AS AN INDUSTRIAL POISON

* CEILING LIHITS **N/E = NOT ESTABLISHED
III. PHYSICAL DATA

BOILING POINT:

SPECIFIC GRAVITY (H2O=1): VAPOR DENSITY (AIR=1):

% VOLATILES BY VOLUME: APPEARANCE AND ODOR: ≥5000°F

Approx. 7.8-8.2 (60°F)

N/A N/A

Various Shapes, Solid Odorless Metal MELTING POINT:

VAPOR PRESSURE: SOLUBILITY IN H₂O:

EVAPORATION (BUTYL ACETATE=1):

Approximately 2500°F

N/A

insolubis N/A

IV. FIRE AND EXPLOSION DATA

FLASH POINT:

None

FIRE POINT:

None

V. HEALTH HAZARD INFORMATION

WE DO NOT CONSIDER THIS PRODUCT IN THE FORM IT IS SOLD TO CONSTITUTE A PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABRADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION THAT CAUSES A RELEASE OF DUST OR FUME MAY CAUSE SOME OF THE INGREDIENTS TO CHANGE TO A FORM WHICH COULD AFFECT EXPOSED WORKERS.

PRIMARY ROUTES OF ENTRY:

inhalation

EMERGENCY FIRST AID:

Remove to fresh air, if condition continues -

consult physician

Flush well with running water to remove particulate. Get medical attention.

Brush off excess dust. Wash area well with

soap and water.

Seek medical help if large quantities of material have been ingested.

Eye Contact

Skin Contact

Ingestion

20147 86/03/21

, to day, this children it semiciant amounts is completely hart. COBALT over exposure can cause chronic interstitial pneumonitis. Wheezing may be considered evidence of hypersensitivity to cobal

CHROMIUM has a high pulmonary toxicity, is an experimental cause of neoplasm(s), and is a carcinogen.

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IRON — Iron dust can cause conjunctivitis, choroiditis, retinitis, and siderosis of tissues. Iron oxide fume is generated in welding, and continued exposure to concentrations above 30 $\mathrm{mg/M^3}$ can cause chronic bronchitis.

MANGANESE has a high toxicity via the intraperitoneal and inhalation routes; however, prolonged exposure can cause central nervous

MOLYBBENUM can be toxic via intraperitoneal and subcutaneous routes. Care should be taken to avoid inhalation of large amounts of dust or fume. Is generally considered to exhibit a low order of toxicity.

NICKEL is a potential carcinogen and can cause neoplasm(s) via inhalation, subcutaneous, implantation, intraperitoneal, and parental

VANADIUM may act as an irritant to the conjunctivae and respiratory tract.

TANTALUM is not generally regarded as an industrial poison, however, no dust when inhaled in sufficient amounts is completely inert.

TITANIUM is considered a physiologically inert dust, however, high concentration of oxides can cause mechanical irritation of eyes,

TUNGSTEN is not generally regarded as an industrial poison, however no dust when inhaled in sufficient amounts is completely iner-

VI. REACTIVITY DATA

STABILITY:

Chemically Stable

INCOMPATIBILITY:

Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS DECOMPOSITION PRODUCTS:

Metallic Oxides

VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

N/A

WASTE DISPOSAL METHOD:

- Sale as Scrap

Dust, etc. — Follow Federal, State and Local Regulations Regarding Disposal

VIII. SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS:

General - Recommended.

Local - As Required,

PERSONAL PROTECTIVE EQUIPMENT:

Respiratory Protection:

if fumes, misting or dust condition occurs and TLV as indicated in Section II is

exceeded, provide NIOSH approved respirators.

Eye Protection:

Recommended.

Gioves:

As required.

Other Clothing or Equipment:

As required.

IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CON-CENTRATIONS AT A MINIMUM.

CINCINNATI MILACRON

MATERIAL SAFETY DATA SHEET

PRINTED: February 9, 1992 DATE EFFECTIVE: 12/91 MSDS Number: 291

GENERAL SUPPLY CO. 1701 Kilgore Avenue Muncie, IN 47304

CIMTECH® 400

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name(s):

Product Code(s):

Manufacturer:

Products Division/ Cincinnati Milacron

Marketing Company

Telephone Number 513-841-8181

Emergency

CIMTECH 400 CIMTECH 400

Undyed 291 Pink 292

4701 Marburg Avenue Cincinnati, OH 45209

Information Telephone Number 513-841-8964

CIMTECH 400

Blue 293

Generic Name:

Water-based metalworking fluid concentrate

2. EMERGENCY OVERVIEW

Product is a clear liquid which may be dyed. Product is alkaline and a primary eye irritant. Highway spills in rainy weather could result in slippery road conditions. No other significant health effects are associated with this material. Product concentrate is corrosive to aluminum. UN1760

3. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS Number	Max %	These ingredients may contribute to the acute product hazards listed under the Potential Health
Ethanolamine Neodecanoic acid Aminomethylpropanol Heptanoic acid Pelargonic acid Triethanolamine	141-43-5 26896-20-8 124-68-5 111-14-8 112-05-0 102-71-6	10 10 10 10 10	Effects section. Other substances, not "Hazardous" under the OSHA Hazard Communication Standard may be present. Further composition information may be made available to health professionals as provided in the standard.

4. HAZARDS IDENTIFICATION

Potential Health Effects of Direct Exposure

	Product Concentrate	Product at Use Dilution
Inhalation	Not Applicable	Extended Exposure to mists may cause upper respiratory irritation
Eye Contact	Primary eye Irritant	Will cause stinging sensation in the eye
Skin Contact	Not a primary skin irritant	Not irritating to the skin when used as directed and good personal hygiene is practiced
Ingestion	Not orally toxic	Swallowing small quantities may cause nausea or diarrhea

Toxicity data are available. Call 513-841-8964 (Health Information)

HAZARDS IDENTIFICATION (cont.)

When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splash guards, as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted.

Mild skin irritation (redness and dryness of hands) may be experienced when the diluted product has been contaminated by certain oils, by dissolved metals or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Cimcool Technical Services (513-841-8133) for specific recommendations.

Carcinogen Listings NTP: No IARC: No OSHA: No

Signs and symptoms of exposure: Eye injury may result from contact with concentrated product. Skin irritation can result from improper use and handling of concentrate or mix.

Medical conditions generally aggravated by exposure: May aggravate existing skin irritation where further defatting or skin penetration could occur.

5. EMERGENCY AND FIRST AID PROCEDURES

Eyes – In case of eye contact with concentrated product or diluted mix, flush immediately with running water for 15 minutes, then promptly get medical attention to check for possible irritation.

Skin contact-- In case of skin contact with product concentrate, wash with water as soon as possible.

Diluted product is not irritating to the skin when used as recommended and good personal hygiene is practiced. Remove severely contaminated clothing, including shoes. Launder before reuse. If irritation persists, get medical attention.

Ingestion-- If concentrate or mix is swallowed, do not induce vomiting. Dilute by drinking water or milk. Immediately contact physician and obtain treatment.

Swallowing small quantities of diluted product is not expected to cause injury or illness; but, as should be expected when drinking oily, soapy water, nausea, diarrhea or abdominal distress may be experienced.

Inhalation-- Not expected to be a probable route of exposure to product concentrate.

Inhalation of diluted mix can occur in applications where high mist levels are generated. OSHA has set a PEL of 15 mg/M³ for any airborne particulate as a nuisance level of exposure.

6. FIRE AND EXPLOSION HAZARD DATA

Flash Point (COC)	NA NA	NFPA/HMIS Codes
Flammable Limits	ŅĄ	·
Lower Explosive Limit Upper Explosive Limit	NA NA	Health 1
Extinguishing Media	NA NA	Flammability 0 Reactivity 0
Special Firefighting Procedures	None	Other NA
Unusual Fire and Explosion Hazards	None	
Hazardous Combustion Products	Smoke.	

fumes and oxides of carbon

7. ACCIDENTAL RELEASE MEASURES

Contain the spill, collect on absorbent material and discard as dictated by Federal, state and local regulations that may apply. Flush area thoroughly with water.

Reportable Quantity None

CINCINNATI

CIMTECH® 400

MATERIAL SAFETY DATA SHEET

8. WASTE DISPOSAL

For Used Mix: Disposal procedures must comply with local, county, state and Federal regulations. If pre-treatment is needed, chemical emulsion breaking or ultrafiltration may be used. Contact Cimcool Technical Services (513-841-8133) for assistance.

For Unused Concentrate: Concentrate is not a hazardous waste, as defined under 40 CFR 261.

Cimcool Technical Services (513-841-8133) can provide a list of waste haulers for your area.

"Empty" Containers will contain a residue which is not considered a hazardous waste under RCRA regulations. Drums can be drained to a "drip dry" condition by inversion and can be offered for recycling or scrap.

9. HANDLING AND STORAGE

Use only as recommended by CINCINNATI MILACRON. Avoid all contact of concentrate with eyes or skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions -- Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

10. CONTROL MEASURES

Respiratory Protection-- Product is not volatile.

Ventilation -- For most applications, normal shop ventilation is adequate. However, when high mist levels are generated or where machines are close together or ventilation is inadequate, operators may experience respiratory irritation. For such applications, use of splash guards or mist collectors is recommended.

Protective Gloves-- Impervious gloves are required when handling product concentrate.

Eye Protection-- Safety shield or goggles required when handling concentrated product.

Other protective clothing or equipment— Effective metalworking plant protective clothing as appropriate.

Work/Hygiene Practices-- Good personal hygiene should always be followed.

11. PHYSICAL/CHEMICAL CHARACTERISTICS

Vapor Density NA pH (5% mix) 8.8 - 9	Boiling Point		100% miscible Clear/chemical 9.5 - 9.8
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12. REACTIVITY

13. TRANSPORT INFORMATION

DOT Proper Shipping Name	DOT Hazard Classification	Corrosive
Corresive Liquid, n.o.s. (contains ethanoiamines), PG III	U.S. Harmonized Tariff Schedule Code:	
ID Number UN1760	3403.99.00.00.9	

14. REGULATORY INFORMATION

Exposure Guidelines

OSHA PEL OSHA STEL ACGIH TLV ACGIH STEL Regulated Material 3 ppm 3 ppm 6 ppm Ethanolamine

CERCLA

Components present in this product at a level which could require reporting under 40 CFR 302.4

SARA TITLE III

Extremely Hazardous Substances (302) . NA

Hazardous Substances (311,312): Product concentrate is a hazardous substance as defined under the OSHA Hazard Communication Standard and may be reportable under the provisions of SARA Sections 311 and 312.

SARA Hazard Categories

Acute Health Yes Chronic Health No No No Sudden Release of Pressure Reactive

RCRA

Product concentrate does not meet the definition of a hazardous waste as defined under 40 CFR 261. It is possible that in use, the mix may be contaminated by metals or by chlorinated solvents and the final waste may meet the TCLP definition. Each facility should assess each waste stream to determine if the used fluid should be treated as a hazardous waste.

TSCA-- The ingredients of this product are on the TSCA inventory.

State Right-to-Know

Many states have enacted Community Right-To-Know laws which require information beyond that mandated by federal laws. Since some of these laws are inconsistent with the federal laws, the information in this sheet may not fully meet the requirements of every state.

California SCAQMD Rule 443.1 VOC's ... NA

Toxic Substances (313): Components present in the product at levels which could require reporting under the statute:

Chemical Name

CAS #

Max %

NA

Glossary of Abbreviations

Occupational Safety and Health Administration OSHA ... ACGIH . American Conference of Governmental Industrial PEL Permissible Exposure Limit Resource Conservation and Recovery Act Hygienists Chemical Abstracts Service CERCLA Comprehensive Environmental Response Compensation and Liability Act SARA Superfund Amendments and Reauthorization Act SCAQMD . Southern California Air Quality Monitoring District

CFR ... Code of Federal Regulations Short-Term Exposure Limit

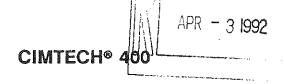
COC . Cleveland Open Cup Toxicity Characteristics Leaching Procedure Threshold Limit Value DOT . . . Department of Transportation

IARC ... International Agency for Research on Cancer Toxic Substances Control Act NA . . . Not Applicable
NTP . . . National Toxicology Program ... Volatile Organic Chemicals

NOTE: The opinions expressed herein are those of qualified experts within CINCINNATI MILACRON and of their suppliers. We believe that the information contained herein is current as of the date of this Material Data Sheet. Since the use of this information and of these opinions and the condition and use of the product are not within the control of CINCINNATI MILACRON, it is the user's obligation to determine the conditions of safe use of the product.

This is the last page

PRINTED: February 9, 1992 DATE EFFECTIVE: 12/91 MSDS Number: '291





1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name(s):

CIMTECH 400 CIMTECH 400 Undyed 291 CIMTECH 400

Pink 292 Blue 293

Product Code(s):

Generic Name: Water-based metalworking fluid concentrate Manufacturer: Products Division/ Cincinnati Milacron

Marketing Company 4701 Marburg Avenue Cincinnati, OH 45209

Emergency Telephone Number 513-841-8181

Information Telephone Number 513-841-8964

2. EMERGENCY OVERVIEW

Product is a clear liquid which may be dyed. Product is alkaline and a primary eye Irritant. Highway spills in rainy weather could result in slippery road conditions.

No other significant health effects are associated with this material. Product concentrate is corrosive to aluminum. UN1760

3. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components	CAS Number	Max %	These ingredients may contribute to the acute product hazards listed under the Potential Health
Ethanolamine	141-43-5	10	Effects section. Other substances, not "Hazardous" under the OSHA Hazard
Neodecanoic acid	26896-20-8	10	
Aminomethylpropanol	124-68-5	10	Communication Standard may be present.
Heptanoic ácid	111-14-8	10	Further composition information may be made
Pelargonic acid	112-05-0	10	available to health professionals as provided in
Triethanolamine	102-71-6	10	the standard.

4. HAZARDS IDENTIFICATION

Potential Health Effects of Direct Exposure

	Product Concentrate	Product at Use Dilution
Inhalation	Not Applicable	Extended Exposure to mists may cause upper respiratory irritation
Eye Contact	Primary eye irritant	Will cause stinging sensation in the eye
Skin Contact	Not a primary skin irritant	Not irritating to the skin when used as directed and good personal hygiene is practiced
Ingestion	Not orally toxic	Swallowing small quantities may cause nausea or diarrhea

Toxicity data are available. Call 513-841-8964 (Health Information)

HAZARDS IDENTIFICATION (cont.)

When used in applications generating high levels of mist, operator exposure can be minimized by proper ventilation, use of mist collectors or splash guards, as appropriate. If there is doubt about actual mist levels present, monitoring should be conducted.

Mild skin irritation (redness and dryness of hands) may be experienced when the diluted product has been contaminated by certain oils, by dissolved metals or when mix ratio is too strong. When problems occur, use of water-resistant barrier creams may be a temporary control measure. Contact Cimcool Technical Services (513-841-8133) for specific recommendations.

Carcinogen Listings NTP: No IARC: No OSHA: No

Signs and symptoms of exposure: Eye injury may result from contact with concentrated product. Skin irritation can result from improper use and handling of concentrate or mix.

Medical conditions generally aggravated by exposure: May aggravate existing skin irritation where further defatting or skin penetration could occur.

5. EMERGENCY AND FIRST AID PROCEDURES

Eyes – In case of eye contact with concentrated product or diluted mix, flush immediately with running water for 15 minutes, then promptly get medical attention to check for possible irritation.

Skin contact—In case of skin contact with product concentrate, wash with water as soon as possible.

Diluted product is not irritating to the skin when used as recommended and good personal hygiene is practiced. Remove severely contaminated clothing, including shoes. Launder before reuse. If irritation persists, get medical attention.

Ingestion-- If concentrate or mix is swallowed, do not induce vomiting. Dilute by drinking water or milk. Immediately contact physician and obtain treatment.

Swallowing small quantities of diluted product is not expected to cause injury or illness; but, as should be expected when drinking oily, soapy water, nausea, diarrhea or abdominal distress may be experienced.

Inhalation— Not expected to be a probable route of exposure to product concentrate.

Inhalation of diluted mix can occur in applications where high mist levels are generated. OSHA has set a PEL of 15 mg/M³ for any airborne particulate as a nuisance level of exposure.

6. FIRE AND EXPLOSION HAZARD DATA

Flash Point (COC)	NA	NFPA/HMIS Codes
Flammable Limits	NA '	
Lower Explosive Limit		Health 1
Upper Explosive Limit	NA	Flammability 0
Extinguishing Media		Reactivity 0
Special Firefighting Procedures		Other NA
Unusual Fire and Explosion Hazards	None	
Hazardous Combustion Products	Smoke.	

tumes and oxides of carbon

7. ACCIDENTAL RELEASE MEASURES

Contain the spill, collect on absorbent material and discard as dictated by Federal, state and local regulations that may apply. Flush area thoroughly with water.

Reportable Quantity None

8. WASTE DISPOSAL

For Used Mix: Disposal procedures must comply with local, county, state and Federal regulations. If pre-treatment is needed, chemical emulsion breaking or ultrafiltration may be used. Contact Cimcool Technical Services (513-841-8133) for assistance.

For Unused Concentrate: Concentrate is not a hazardous waste, as defined under 40 CFR 261.

Cimcool Technical Services (513-841-8133) can provide a list of waste haulers for your area.

"Empty" Containers will contain a residue which is not considered a hazardous waste under RCRA regulations. Drums can be drained to a "drip dry" condition by inversion and can be offered for recycling or scrap.

9. HANDLING AND STORAGE

Use only as recommended by CINCINNATI MILACRON. Avoid all contact of concentrate with eyes or skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions -- Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

10. CONTROL MEASURES

Respiratory Protection-- Product is not volatile.

Ventilation -- For most applications, normal shop ventilation is adequate. However, when high mist levels are generated or where machines are close together or ventilation is inadequate, operators may experience respiratory irritation. For such applications, use of splash guards or mist collectors is recommended.

Protective Gloves—Impervious gloves are required when handling product concentrate.

Eye Protection-- Safety shield or goggles required when handling concentrated product.

Other protective clothing or equipment--Effective metalworking plant protective clothing as appropriate.

Work/Hygiene Practices-- Good personal hygiene should always be followed.

11. PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point 212° F Evaporation Rate Like water Specific Gravity 1.0582 Solubility in Water 100% miscible Vapor Pressure (mm Hg) Like water Melting Point NA PH (concentrate) 9.5 - 9.8 Vapor Density NA PH (5% mix) 8.8 - 9.2

12. REACTIVITY

13. TRANSPORT INFORMATION

DOT Hazard Classification

Corrosive

U.S. Harmonized Tariff Schedule Code: 3403.99.00.00.9

14. REGULATORY INFORMATION

Exposure Guidelines

ACGIH TLV ACGIH STEL Regulated Material OSHA PEL OSHA STEL

Ethanolamine 3 ppm 3 ppm

CERCLA

Components present in this product at a level which could require reporting under 40 CFR

SARA TITLE III

Extremely Hazardous Substances (302) . NA

Hazardous Substances (311,312): Product concentrate is a hazardous substance as defined under the OSHA Hazard Communication Standard and may be reportable under the provisions of SARA Sections 311 and 312.

SARA Hazard Categories

this tipedia outegoires		
Acute Health	Y	es
Chronic Health		
Fire		
Sudden Release of Pressure		
Reactive		No

Product concentrate does not meet the definition of a hazardous waste as defined under 40 CFR 261. It is possible that in use, the mix may be contaminated by metals or by chlorinated solvents and the final waste may meet the TCLP definition. Each facility should assess each waste stream to determine if the used fluid should be treated as a hazardous waste.

6 ppm

TSCA-- The ingredients of this product are on the TSCA inventory.

State Right-to-Know

Many states have enacted Community Right-To-Know laws which require information beyond that mandated by federal laws. Since some of these laws are inconsistent with the federal laws, the information in this sheet may not fully meet the requirements of every state.

California SCAQMD Rule 443.1 VOC's ... NA

Toxic Substances (313): Components present in the product at levels which could require reporting under the statute:

Chemical Name CAS # Max %

NA

Glossary of Abbreviations

ACGIH . American Conference of Governmental Industrial Hygienists Chemical Abstracts Service

CERCLA Comprehensive Environmental Response Compensation and Liability Act

Code of Federal Regulations ČOC .. Cleveland Open Cup DOT . Department of Transportation

IARC .. International Agency for Research on Cancer

NA . . . Not Applicable
NTP . . . National Toxicology Program

OSHA ... Occupational Safety and Health Administration Permissible Exposure Limit

PEL Resource Conservation and Recovery Act SARA Superfund Amendments and Reauthorization Act

SCAQMD . Southern California Air Quality Monitoring District

STEL Short-Term Exposure Limit Toxicity Characteristics Leaching Procedure TCLP

TLV Threshold Limit Value

TSCA Toxic Substances Control Act Volatile Organic Chemicals VOC

NOTE: The opinions expressed herein are those of qualified experts within CINCINNATI MILACRON and of their suppliers. We believe that the information contained herein is current as of the date of this Material Data Sheet. Since the use of this Information and of these opinions and the condition and use of the product are not within the control of CINCINNATI MILACRON, it is the user's obligation to determine the conditions of safe use of the product.

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RATTLY (As Used on Label and List)	CIMINCH 4	.00	·		
SECUION I			SEP 6 1891		
Yanufacturer:	Energency Telephone Number				
4		513-84	1-8181		
Products Division /					
Cincinnati Milacron Marketing Company	Telephone Number for Information 513-841-8964				
4701 Markurg Averue	Date Prep	ared			
Cincinnati, Chio 45209	4/90				
Section II - Hazandous Ingredients/Identity	/ Information		17-18-40-40-40-40-40-40-40-40-40-40-40-40-40-		
Hazardous Components	OSHA PEL	ACGIH TLV	CAS No.	8	
Ethanolamine	:3 ppm	3 ppm	141-43-5	< 10	
Neodecanoic acid	- T	de de	26896-20-8		
minomethylpropanol			124-68-5	< 10	
Meptanoic acid			111-14-8		
Pelargonic acid		Children	112-05-0	< 10	
Pelargonic acid Triethanolamine e ingredients listed above may contribute	to the pmd	uct hazard as	102-71-6		
Priethanolamine e ingredients listed above may contribute in Section VI of this sheet. Section III - Physical/Chemical Characteric Boiling Point 212°F	stics Specific	: Gravity (H ₂ (102-71-6 s listed		
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Stability: Stable Conditions to Avoid: NA

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> Hazardous Polymerization: Will not occur

Incompatibility (Materials to Avoid): Avoid contact of concentrate with strong acids.

Hazardous Decomposition or By-products: None.

Section VI - Health Hazard Data

Route(s) of Entry:

Inhalation?

YES Skin? YES Ingestion? NA

Health Hazards (Acute and Chronic) Concentrate is alkaline. Harmful if taken internally. Concentrate is an eye irritant. No adverse chronic effects are expected when used as recommended.

Carcinogenicity: NIP?

NO

TARC Monographs? NO

OSHA Requilated? NO

Signs and Symptoms of Exposure Eye damage may occur from contact with concentrate. product is not a primary skin irritant; however, skin irritation may occur if used improperly (concentrate or mix). Thus

Medical Conditions Generally Aggravated by Exposure May aggravate existing skin irritation where further defatting or skin penetration could occur.

Emergency and First Aid Procedures In case of eye contact, flush immediately with running water for 15 minutes, then get prompt medical attention to check for possible irritation. In case of skin contact with concentrate, wash immediately with water. If concentrate or mix is swallowed, do not induce vomiting. Dilute with water or milk. Immediately contact physician and obtain treatment.

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled Thoroughly flush with water to sewēr.

Waste Disposal Method FOR USED MIX: 1) Ultrafiltration for sewer disposal, or 2) sewer disposal if applicable according to local regulations, or 3) recycle equipment for reuse, or 4) treat with polymer or inorganic deemulsifiers, then dispose of top layer by incineration or landfill, and dispose of water layer in sanitary sewer. FOR UNUSED CONCENTRATE: Incinerate, or contact vendor.

Precautions to Be Taken in Handling and Storing Use only as recommended by Cincinnati Milacron. Avoid all contact of concentrate with eyes or prolonged contact with skin. Do not swallow. If frozen, product separates. Thaw completely at room temperature and stir thoroughly.

Other Precautions Contains amines. Do not add sodium nitrite or other nitrosating agents to this product. Suspected cancer-causing nitrosamines could be formed.

Section VIII - Control Measures

Respiratory Protection (Specify type) Product not volatile.

Ventilation Mechanical - General

Protective Gloves Waterproof gloves required when handling concentrate.

Eye Protection Safety shield or goggles required when handling concentrate.

Other Protective Clothing or Equipment Effective metalworking plant protective clothing as appropriate.

Work/Hygienic Practices Good personal hygiene should always be followed.

Material Safety Data Sheet May be used to comply with OSHA's Hazard Communication Standard, 29 CFR 1910.1200. Standard must be resulted for specific requirements.

U.S. Department of Labor Occupational Safety and Health Administration (Non-Mandatory Form)



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Manufacturer's Name Products Di	.vision/	Emergency Tele	chone Number	The second secon	
Cincinnati Milacron Market	ing Company			513-841-8	181
Address (Number, Street, City, State, and ZIP 4701 Marburg Avenue	Code)	Telephone Numi	ow for Information	513-841-8	All the second state of th
Cincinnati, Ohio 45209		Date Prepared	aliana di Angelia di A	1/88	704
	echteren mit der der eine er e	Signature of Pres	parer (opsoner)	1/00	
Section II - Hazardous Ingredient	s/Identity informatio	XI			ann ag 1800 i bandanasa) a Farrant tamang 1800 kabupatan da panada panada panada panada panada panada panada p
Hazardous Components (Specific Chemical Id			ACGIH TLV	Other Limits Recommended	
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Neodecanoic acid		3 ppm	3_pom		
Aminomethylpropanol		** - ***			
Heptanoic acid	the commence of the commence o				
Pelargonic acid			 an 40-		<u></u>
Triethanolamine				1	
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Section III — Physical/Chemical Che	t .	e to the pro	duct hazard	as listed	
in Section VI of this sheet in Section VI of this sheet in Section VI of this sheet in Section III — Physical/Chemical Character Point	racteristics	e to the pro		as listed	
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•	WILL NOT OCCUR	Х	NA				
Section VI —	Health Hazard	Date					
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Concentrat	e is an eye.	irri		ay oc	cur from co	ful if taken interna ntact with concentra	-
arcinogenicity:	NTP)	NO L	VPC Nor	ograpius? N	O OSHA Required?	NO
(concentra	te or mix).			,		occur if used impro	* *
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xwhygenec Pra	cices al hygiene s	hould	d always be follow	eđ.			

APPENDIX E RESUME FOR JOHNIE R. BAKER

JOHNIE R. BAKER

Principal Engineer

B.S. Civil Engineering, 1974 Purdue University

Mr. Baker has over 19 years of professional experience as an engineer. His responsibilities have included project engineering management on large-site remediation projects for major corporate accounts. Related duties have included project development, proposal preparation, on-site project management, cost control and monitoring, and engineering report preparation. He also has expertise with on-site project management of plant closures and contaminated-site remediation. Field engineering management of hazardous waste projects have included completion of numerous projects in the following areas: underground storage tank (UST) management, emergency response, waste sampling and characterization, groundwater monitoring, soil boring investigations, lagoon closures, drum management, Sampling and Analysis Plans (SAPs), asbestos cleanups, hazardous waste storage area closures, Remedial Action Plans (RAPs), plant closures, spill cleanups, hazardous waste evaluations, decontamination projects, contaminated-soil cleanups (including PCBs), sludge solidification projects, lab pack projects, groundwater assessment, and client/agency negotiations. His experience is presented below.

Experience

Management Experience

- Served as National Accounts Manager for an environmental services company where his responsibilities involved management of all corporate accounts including numerous key, largeclient accounts. Included working with clients on major remediation and hazardous waste disposal projects to insure environmental compliance and customer satisfaction, and to secure corporate waste disposal.
- Served as Division Manager for a remediation engineering company where his responsibilities included direct management of field crews involved with UST removals, plant cleanups and closures, emergency response, hazardous waste cleanups, and other types of remediation projects. Also included management of division's business activities, budgets, safety compliance, employee training, and engineering department coordination.
- Served as a Senior Project Engineer for an engineering company where he was responsible for the business development for the company since its creation. Specialized in field engineering supervision of hazardous waste management projects. Possesses a wide range of experience in all phases of hazardous waste management from plant closures to site decontamination projects, SAPs and actual sampling, waste characterizations, PCB cleanups, drum management projects, lagoon cleanups, tank removals, groundwater monitoring/recovery systems, and other projects involving hazardous wastes.

- Served as an Engineer Representative for an environmental waste disposal company where his responsibilities included potential industry customer contact and surveying of their waste disposal needs. Involved inspecting the process-generating industrial wastes, sampling of waste streams, characterization and interpretation of analysis. Assisted the industry by evaluating suitable sites for reclamation or for disposal of material not currently processed by his employer.
- Employed by the Indiana State Board of Health in their Water Pollution Control Division where he worked in the Compliance Section for the NPDES permit program. Required a broad knowledge of industrial processes and wastewater treatment. Assisted in developing state regulations to control the use and disposal of PCBs in Indiana.
- Employed by the Indiana State Board of Health in their Solid Waste Control Division where he was Coordinator for Indiana's Hazardous Waste Management Program. Involved in establishing criteria for the sampling and characteriazation of hazardous wastes, for the proper disposal of hazardous materials such as industrial wastes and pesticides, and in establishing criteria for sites disposing of hazardous wastes including the location of such sites. Worked very closely with industry to understand the processes which generated the hazardous wastes. Inspected solid waste landfills and industrial disposal sites for compliance with state and federal regulations. Also involved during this time in the PCB investigations for a major employer in Bloomington, Indiana, including surveys of disposal sites, collection of stream and groundwater samples, interpretation of data, and development of programs to prevent further contamination from these sites.

Project Experience

- Provided management of a metals machining manufacturer's plant closing, including removal of USTs, remediation of contaminated soils, soil and groundwater investigation, groundwater recovery system installation, and interior plant decontamination (asbestos removal oversight, pit cleaning, equipment decontamination, and plant floor decontamination). Activities included development of a work plan, cost estimating and cost control, preparation of status and final reports to document remedial work, and interaction with state and local agencies.
- Provided management of removal of a cyanide plating line, including decontamination and dismantling of plating tanks and equipment, cleanup and decontamination of floor areas, removal of contaminated concrete, and site restoration. Completed the majority of work in Level B protection which required strict on-site supervision and monitoring to meet Health and Safety Plan requirements.
- Provided management of several PCB-contaminated sites, including site investigation plan development and implementation, site decontamination, contaminated soil and concrete removal, proper transportation and disposal oversight, verification sampling and analysis, and final report preparation to document cleanup activities.
- Provided management of the closure and cleanup of chromium plating facilities, including total plant decontamination from ceiling to floor; cleaning and removal of plating equipment such as tanks, duct work, fume scrubber units, decontamination and removal of contaminated concrete and soils; site restoration for sale of property; site soil and groundwater investigation; and preparation of reports.

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- Provided management of three lead battery plant sites, including development and implementation of a Health and Safety Plan, conducting air monitoring, developing a work plan, conducting plant decontamination, and removing lead-contaminated soils.
- Provided management of the closure of hydrofluoric and nitric acid pickling line for stainless steel, including development of new plating line operations and building; decontamination and dismantling of oil pickling line; site soil and groundwater assessment; and development of site closure including capping of area for closure.
- Provided management of the cleanup of wastewater treatment lagoons, including sampling and analysis for characterization, sludge removal and solidification, transportation oversight, disposal of residues monitoring, and ensuring project cost control.

Professional Training and Continuing Education Courses

40-Hour OSHA Health & Safety Training (29 CFR 1910.120), 1983
16-Hour OSHA Emergency Response Training (29 CFR 1910.120), 1986
8-Hour Health & Safety Refresher Training, 1993
Hazardous Materials Response Training, Texas A&M, 1983
Confined Space Entry Seminar, 1986
Asbestos Technology Seminar, 1984
PCB Transformer Retrofill Course, 1983
Dale Carnegie Training, 1978
CPR Certification; December, 1993

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APPENDIX F

HERITAGE LABORATORIES, INC. QUALITY ASSURANCE REPORTS

QUALITY CONTROL - the overall system of activities whose purpose is to document and control the quality of environmental data so that it meets the needs of the users.

- A. Quality Control Checks standards of samples from an independent source that are analyzed at a specified frequency.
 - 1. Quality Control Check Standards standard solutions from a source other than normal calibration standards that are certified and traceable. These standards are used to check the accuracy of a calibration curve.
 - 2. Quality Control Check Sample (also known as Reference Materials) samples obtained from an independent source for which the level(s) of analytes have been validated. These samples are prepared and analyzed with a sample set of similar matrix. If these samples have been obtained from the National Institute of Standards and Testing (formerly National Bureau of Standards), these are referred to as Standard Reference Materials.
- B. <u>OCTS Quality Control Tracking System</u> the computerized system at EMS Heritage Laboratories, Inc. utilized to contain, compile and report quality control data.

1. Quality Control Types

a. BLA01 - Reagent blank, calibration blank.

An aliquot of de-ionized (DI) water containing the same reagents as the sample but is NOT taken through preparation. This sample is used as the calibration zero concentration for initial calibration purposes. The BLA01 is analyzed as a sample as frequently as required in the QAP. The BLA01 can be used to re-zero only after it has been analyzed as a sample. Instrument response is entered on bench sheets. If the instrument response is above the Control Limit when the BLA01 is run as a sample and calculated as a concentration, the samples back to the last acceptable BLA01 must be re-analyzed. If BLA01 is 0.5-0.99 of IDL, the concentration may be entered into the data base. Otherwise, enter less than 0.4X IDL. Entries into the data base MUST BE CONSISTENT, e.g., either instrument response OR concentration -NOT both, and must have units reported.

b. BLA02 - Method Blank or Preparation Blank.

Same as above but is carried through the complete steps of analysis from digestion/extraction/etc. in the exact same manner (e.g., same glassware, reagents, storage bottle) as the sample. BLA02 is matrix specific and must be run with each matrix and each prep run. A prep run consists of only 1 analyst on 1 day, utilizing the same reagents and glassware. Subtraction of the method blank is addressed by each

method. A general rule applies to the BLA02: If the BLA02 is equal to or exceeds the method detection limit (MDL), samples in that group must be re-prepped. Therefore a BLA02 must be run with each sample set. Instrument response is recorded on bench sheets, but concentration is entered into the QC data base in all cases. If BDL, entered <0.4X IDL into the QC data base.

c. CAL01 - Calibration Standard.

Calibration standards (the number and frequency of which are specified in each method) are used to establish an analytical curve for that analyte based on absorbance, emission intensity, area or other type of measurable response for known standards. CAL01, CAL02, CAL03, etc., are prepared using exactly the same reagents used in the analysis of the sample. Note that some methods require a CDL standard be included as a CAL standard.

d. CCV - Continuing Calibration Verifications.

Analytical standard that is run with a frequency specified in the QAP at a minimum frequency of 10% <u>BUT</u> may be alternated with ICV01 to meet the frequency requirements. The CCV may be from the sam source as calibration standards or a different source depending on the method used. All runs must culminate with this sample's analysis except for GC/MS.

e. CDL01 - Contract Detection Limit Standard.

A reagent sample to verify analytes are quantifiable at the detection limit stated. The amount of analyte in this sample may be specified by a method, project, or client. In general, twice the analyte concentration of the regulatory detection line or CRDL is a good CDL01 amount. (Required weekly for drinking water organic analyses). Some methods mandate use of this standard for inclusion into the calibration curve.

f. DLCS - Duplicate Laboratory Control Sample (ICV02 or EPA supplied LCS).

Duplicate control sample of known analyte concentration and source analyzed by exactly the same method as the samples. DLCS must be of the same matrix as the samples but must be from a different source than the calibration standards (EPA or NIST traceable when possible) Results are expressed as % recovery and RPD. Also known as . "Laboratory Fortified Blank" when analytes are spiked into reagent water.

g. DLCS1 - Duplicate Laboratory Control Sample (ICV01 or EPA supplied LCS).

Duplicate control sample of known analyte concentration and source analyzed by exactly the same method as the samples. DLCS must be of the same matrix as the samples but must be from a different source than the calibration standards (EPA or NIST traceable when possible). Results are expressed as % recovery and RPD. Also known as a "Laboratory Fortified Blank" when analytes are spiked into reagent water. This "1" designation is a programming device used to indicate that no separable prep exists for the method.

h. DPS01 - Reagent Duplicate, Matrix Spike.

An aliquot of sample (water, oil, S/S/S) spiked with a known quantity of the analyte of interest - but added after preparation or if no preparation is involved in analysis of sample. The sample is split and spiked with exactly the same amount of analyte. Results are expressed as Relative Percent Difference (RPD) or as required.

i. DPS02 - Duplicate Spike (Prepped).

Same as DPS01 but the sample is split in as representative a way as possible, spiked with equal amounts of the analyte, and carried through the preparation step(s). Results are expressed as RPD or as required.

DUP01 - Duplicate Sample Analysis (Non-prepped).

For samples not requiring digestion/extraction/etc., a homogeneous, representative aliquot (water, oil, S/S/S) is split and carried through the analytical steps to quantitation. Results are expressed as RPD.

b. DUP02 - Duplicate Sample Analysis (Prepped).

Same as DUP01 but split before any required preparation and carried through to quantitation exactly as its counterpart. Results are expressed as RPD.

1. ICV01 - Initial Calibration Verification.

This standard verifies the calibration curve, and this analyte must be from a different source as the calibration standards (EPA or NIST traceable when possible).

m. ICV02 - Initial Calibration Verification.

Same as ICV01 but added to the sample before any required preparation. May be equivalent to an LCS when reagent water is utilized as the spiking medium.

n. LCS - Laboratory Control Sample (ICV02 or EPA supplied LCS).

Control sample of known analyte concentration and source analyzed by exactly the same method as the samples. LCS should be of same matrix as samples (must utilize the same procedures) but must be from a different source that the calibration standards (EPA or NIST traceable when possible). Also known as "Laboratory Fortified Blank" when analytes are spiked into reagent water.

o. LCS01 - Laboratory Control Sample (ICV01 or EPA supplied LCS).

Control sample of known analyte concentration and source analyzed by exactly the same method as the samples. LCS should be of the same matrix as samples (must utilize the same procedures) but must be from a different source than the calibration standards (EPA or NIST traceable when possible). Also known as a "Laboratory Fortifie Blank" when analytes are spiked into reagent water. This "01" designation is a programming device used to indicate that no separable prep exists for the method.

p. SPI01 - Matrix Spike (Standard Addition).

A post digestion/extraction spike, or a method with no separable prep. An aliquot of homogeneous sample (water, oil, S/S/S) fortified (spiked) with a known quantity of specific compound(s) and carried through the analysis and quantitation steps. At least one spike per matrix and concentration must be analyzed per run or frequency specified by QAP or SOW.

q. SPI02 - Matrix Spike (Pre-digestion/extraction; prepped).

Same as a SPI01 but is used when preparations are required. Calculate as a percent recovery, unless a method or client specifies differently.

r. SUR01 - Surrogate Spike (Organic analyses only).

Surrogate standards are added to every blank, sample, LCS, MS, MSL and standard to evaluate analytical efficiency by measuring percent recovery (unless specified to report recoveries differently). A representative sample is taken, surrogates added, analyzed, and

quantitated. A SUR01 would not require preparation, or no separable prep exists for the method.

s. SUR02 - Surrogate Spike (Organic analyses only).

Same as SUR01 but surrogates are added before any preparation. Surrogates are unique compounds not normally detected in environmental samples.

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC.	24-SEP-93	A291069
7901 W. MORRIS ST.	Complete	PO Number
NDIANAPOLIS, IN 46231	04-0CT-93	
(317)243-8305	Printed	Sampled
	05-0CT-93	23-SEP-93

Sample Description

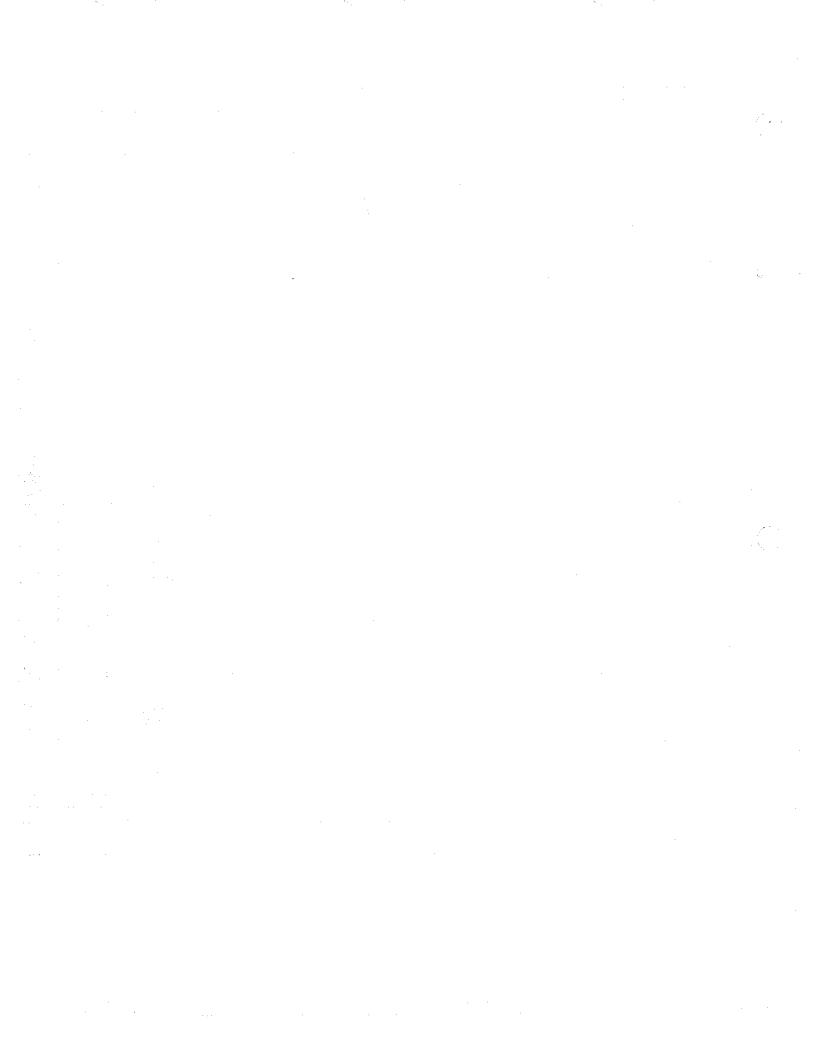
DESCRIPTION: WET GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

Analys	L SOLIDS st: B. PRIC Wer: B. SHRA	EMORE	_3 Analysis Date: 27-SEP-S Review Date: 28-SEP-S		: 3488		it: G401.7.0 m: R198043		
1	Identifier		Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q791187 0701186	A291069	SOLIDS	92		91	Percent	100	1.1
SAMPLE	A291069		See Certificate of Analysis			yakite) ettik	ALMINE HEREIT	na do mina	
LCS01	Q791188		SOLIDS	11.1226		11.1201	Percent	100	

Analys Review Pre	it : A. STOC Her: D. CZEF p: FAA O	CKBURGER ENY R ICP /		ate: 29-SEP-93 Instrum ate: 01-OCT-93 File ID (CHATE) SW846-3010	: 026046 A	11	Test: M610. Run: R1983		
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
ICV01	9793359	İ	CHROMIUM	.5		.52	mg/L	104	
'01	9793363		CHROMIUM	5		-515	mg/L	103	
	Q793366	,	CHROMIUM	.5		.505	mg/L	101	1
1CV01	9793369		CHROMIUM		***************************************	.507	ng/L	101.4	
ICV01	Q793372		CHROMIUM	.5		.53	mg/L	106	
ICV01	Q793375		CHROMIUM	5		.516	mg/L	103.2	
1CV01	9793378		CHROMIUM	.5		.512	mg/L	102.4	}
ICV01	9793381		CHROMIUM	.5		.521	mg/L	104.2	
DUP02	Q786393	A291069	CHROMIUM	.5		.513	mg/L		2.6
CCV	Q793358	***************************************	CHROMIUM	2	114114114141	1.97	mg/L	98.5	
BLA01	Q793360		CHROMIUM			< .02	mg/L		
CDLO1	Q793361		CHROMIUM		***************************************	.116	mg/L	116	
LCS	9786389	-	CHROMIUM	2		1.9	mg/L	95	
BLAOZ	0786390		CHROMIUN			< .02	mg/L		
SAMPLE	A291069	[See Certificate of Ana	ysis					1
CCV	Q793362		CHROMIUM	2		1.97	mg/L	98.5	
BLA01	Q793364		CHROMIUM			< .02	mg/L		
CDL01	Q793383		CHROMIUM			.104	mg/L	104	

Notes	
NOTES	
/ less Than lower Netection limit	
<pre> < Less Than Lower Detection Limit</pre>	

	Hans 1
Quality Assurance Officer:	MAUSCH



QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC.	Received 24-SEP-93	Lab ID A291070
901 W. MORRIS ST. INDIANAPOLIS, IN 46231	Complete 04-0CT-93	PO Number
(317)243-8305	Printed 05-OCT-93	Sampled 23-SEP-93

Sample Description

DESCRIPTION: DRY DUST FROM DRY GRINDING LOCATION: HOOSIER SPLINE BROACH CORP., KOKOMO, IN

Analys	L SOLIDS t: B. PRIC er: B. SHRA		.3 Analysis Date: 27-SEP-C Review Date: 28-SEP-C		: 3488		st: G401.7.0 un: R198043		
QC Type	Identifier 0791187		Parameter SOLIDS	True/Sampl	Spike Val	Observed	Units Percent	% Rec	RPD
LCS01	Q791186	AZYTUOY	SOLIDS	11.1359		11.1347		100	
SAMPLE LCS01	A291070 Q791188		See Certificate of Analysis	11.1226		11.1201	Percent	100	

Pre		R ICP F	CID DIGESTION (LE	Date: 01-001-93	Α	11.	Run: R1983	35	
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPL
rcv01	9793359		CHROMIUM	.5		.52	mg/L	104	
/01	9793363	***************************************	CHROMIUM	5	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.515	mg/L	103	
ICV01	Q793366	,-,-,	CHROMIUM	.5		.505	mg/L	101	ļ
ICV01	0793369		CHROMIUM	5		.507	mg/L	101.4	+
ICV01	9793372		CHROMIUM	.5		.53	mg/L	106	
CV01	9793375		CHROMIUN	.5	***************************************	.516	mg/L	103.2	
ICV01	Q793378		CHROMIUM	. 5		.512	mg/L	102.4	
ICV01	Q793381		CHROMIUM	-,5		.521	mg/L	104.2	
DUP02	9786393	A291069	CHROMIUM	.5		.513	mg/L		2.
CDL01	Q793361		CHROMIUM	•		.116	mg/L	116	
CCV	9793365		CHROMIUM	2		1.96	mg/L	98	
BLA01	9793367		CHROMIUM		***************************************	< .02	mg/L		
LCS	9786389		CHROMIUM	2		1.9	mg/L	95	1
BLA02	Q786390		CHROMIUM		***************************************	< ,02	mg/L		
SAMPLE	A291070		See Certificate of Ana	lysis					<u>.</u>
CCA	9793368		CHRONIUM	2		1.95	mg/L	97.5	
BLA01	Q793370		CHROMIUM			< .02	mg/L		
CDL01	9793383	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	CHROMIUM			.104	mg/L	104	

			Notes	
<	Less Than Low	er Detection Limit		

Quality Assurance Officer:

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U.S. EPA - CLP

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

		SURT AIRLI CACILLAIDE D.	4GE
Lab Name: Herito	ige Labs	Contract: B	ano + Hornburg
Lab Code: <u>NA</u>	Case No.: N	A sas no.: <u>NA</u>	SDG No.: NA
SOW No.: NA		- A control of the co	
EPA	Sample No.	Lab Sample	ID.
		A 29 106	9 TCIP
		0-	10
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	2000 0000 0000		
48000			**************************************

			OPPORTUNITIES OF THE PROPERTY

Were ICP interelement	**************************************		- Peithausa
			Yes/No 7
Were ICP background If yes-were ra	4 haremanan ETED W		Yes/No
application of	background correc	tions?	Yes/No
Comments:			
I certify that this	data package is i	n compliance with th	e terms and
than the conditions	detailed above	nically and for comp	leteness, for ot
	and in the comp	uter-readable data s	
Signature:	-1 and tottowin		(
Date:		Name:	· ·
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7901 West Morris Street Indianapolis, IN 46231 Phone: 317/243-0811 FAX: 317/243-0360

CASE NARRATIVE METALS SECTION

	SAMPLE #	A291069	
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THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH NO MODIFICATIONS.

STEVEN VENDERSEN

INORGANIC SECTION LEADER

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

<u></u>	6.	ritage	Labs		Co	ntract:				
b Code: N	A	-	Case N	o.:			.: _/	<u>vA</u> s	DG No)
			Conc	entra	tion Un	its: ug/	L			
1 1	W	Initial	Calibr	ation		Contin	uing (Calibrat	ion	derent aprile
1	M	True	Found	%R	True	Found 1		Found 2	%R 2	M
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Lithiom Strontium Tin		500	520	104		1970	99	P150		<u>A</u>

U.S. EPA - CLP INORGANICS

BLANKS

Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium	ab Name: _						Cont						
Analyte W Initial Continuing Calibration Blanks Prep. Blank Calib. N Blank C 1 C 2 C 3 C M Calib. Cali	ub Code: _	NA		Case	≥ No.:	N	<u> </u>	SAS N	10.: <u>/</u> Wat	VA er-600	SDG XC).: P	N
Analyte O Initial Continuing Calibration Blanks (Prep. Blank N Blank C 1 C 2 C 3 C M Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium			·	C	oncentr	atio	n Unit	s: uç	1/LSolid	. (mg	1Kg)		
Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium	Analyte	O	Calib.									C	M
Zinc Lithium Strontium Tin Maybdenum Titanium	Antimony Arsenic Barium Berylliu Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesiu Manganes Mercury Nickel Potassiu Selenium Silver Sodium Thallium Vanadium Zinc Lithium Strontium Tin Mdydenum												

U.S. EPA - CLP INORGANICS

				DUPLI	CA:	res		E	:PA	SA	MPLE
Lab Name:		itage	Labs		C	Contract:		_	~		769
Lab Code:	VA	C	Case No.:	_NA		SAS No.:	λ/,	 ./\			:^
	W	1	Concentr	ation	Un	its: water	(va: (mo	11) TZLP			
Analyt	0	Control	Sample	(S)	C	Duplicate (D)		RPD	Secure Company	Q	М
Aluminu Antimon Arsenic Barium	Y_ _	450					C - -				
Beryllin Cadmium Calcium Chromium Cobalt	- -		500				_				
Copper Iron Lead Magnesiu						513		3			
Manganes Mercury Nickel Potassiu	e _						- -				Mirrores de la Companya de la Compan
Selenium Silver Sodium Thallium							-				
Vanadium Zinc Lithium Strontium											
Tin Melvedgrum Titanium											
						•	1				

FORM VIII __ - LCIN * control limit is 20% unless noted

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC.	06-0CT-93	A292240
901 W. MORRIS ST.	Complete	PO Number
INDIANAPOLIS, IN 46231	19-0CT-93	VERBAL
(317)243-8305	Printed	Sampled
	20-0CT-93	05-0CT-93 14:40

Sample Description

SAMPLE ID: 10-5A DESCRIPTION: WET GRINDING DUST

CHROMIUM FAA (1 POINT MSA) SW846-7190

LOCATION: LEVEL ONE REPORTING - STANDARD TAT

Analyst : A. STOCKBURGER Analysis Date: 15-OCT-93 Instrument: FAA

Analys	L SOLIDS st: B. PRIC wer: B. SHRA	EMORE	.3 Analysis Date: 07-001-9 Review Date: 11-001-9		: 3508-3510		st: G401.7.0 un: R198980		
QC Type	Identifier 0798805		Parameter SOLIDS	True/Sampl	Spike Val	Observed 100	Units Percent	% Rec	RPD O
LCS01	Q798804		SOL 1DS	10.7525		10.7509	Percent	100	
SAMPLE LCS01	A292240 Q798811		See Certificate of Analysis	10.7058		10.7042	Percent	100	

	√er: D. CZER p: FAA O		Review Date: 19-0 CID DIGESTION (LEACHATE)				Run: R1996	89	
			CHING PROCEDURE (TCLP ME			11			
C Type	Identifier	Source	Parameter	True/Sampi	Spike Val	Observed	Units	% Rec	RPI
'01	Q805177		CHROMIUM	.5		.532	mg/L	106.4	
CV01	9805181		CHROMIUM	.5		.524	mg/L	104.8	
CV01	Q805184		CHROMIUM	.5		.514	mg/L	102.8	
CV01	Q805187		CHROMIUM	5		.511	mg/L	102.2	
CV01	9805190		CHROMIUM	.5	<u> </u>	.531	mg/L	106.2	31.22.02.00
CV01	9805193	***************************************	CHROMIUM	5		.543	mg/L	108.6	4
I CVO1	Q805196		CHROMIUM	.5		.542	mg/L	108.4	
ICV01	9805199		CHROMIUM	5		.513	mg/L	102.6	1
1CV01	9805202		CHROMIUM	.5		.513	mg/L	102.6	
CV01	9805205		CHROMIUM	5		5	mg/L	100	
ICV01	Q805208		CHROMIUM	.5		.488	mg/L	97.6	
1CV01	Q805211		CHROMIUM	.5		.524	mg/L	104.8	
ICV01	Q805214		CHROMIUM	.5		.52	mg/L	104	.]
ICV01	9805217		CHROMIUM			.535	mg/L	107	
1CV01	9805220		CHROMIUM	.5		.537	mg/L	107.4	
DUP02	9791285	A292246	CHROMIUM	113		.112	mg/L		.9
CCV	Q805204		CHROMIUM	2		2	mg/L	100	
BLAO1	9805206		CHROMIUM			< .02	mg/L		4
LCS	9791281		CHROMIUM	2		1.73	mg/L	86.5	
BLA02	0791282	NA	CHROMIUM			< 0.004	mg/L		
SAMPLE	A292240		See Certificate of Analysis						
CCV	Q805207		CHROMIUM	2		2,02	mg/L	101	
BLA01	9805209		CHROMIUM			< .02	mg/L		
CDL01	9805222		CHROMIUM			.118	mg/L	118	

Comments ^791285 NOTE: * SAMPLE CONCENTRATION AND DUPLICATE CONCENTRATION DIFFERENCE OF < 1 MULTIPLIED BY DETECTION LIMIT.

Test: M610.5.0

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Notes

Less Than Lower Detection Limit

July D.

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC.	06-0CT-93	A292246
'901 W. MORRIS ST.	Complete	PO Number
INDIANAPOLIS, IN 46231	19-0CT-93	VERBAL
(317)243-8305	Printed	Sampled
	20-0CT-93	05-0CT-93 14:50

Sample Description

SAMPLE ID: 10-5B DESCRIPTION: DRY GRINDING DUST

CHROMIUM FAA (1 POINT MSA) SW846-7190
Analyst: A. STOCKBURGER Analysis Date: 15-

LOCATION: LEVEL ONE REPORTING - STANDARD TAT

Analys	L SOLIDS st : B. PRIC ver: B. SHRA	EMORE.	.3 Analysis Date: 07-001-9 Review Date: 11-001-9		: 3508-3510		st: G401.7.0 un: R198980		
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q798805	A292153	SOLIDS	100		100	Percent		0
LCS01	9798804		SOLIDS	10.7525		10.7509	Percent	100	
SAMPLE	A292246		See Certificate of Analysis			******************************			
LCS01	9798811		SOLIDS	10.7058		10.7042	Percent	100	

Analysis Date: 15-OCT-93 Instrument: FAA

C Type	Identifier	Source	Parameter	True/Samol	Spike Val	Observed	Units	% Rec	RPI
'01	Q805177	:	CHROMIUM	.5	,	.532	mg/L	106.4	
cV01	9805181		CHROMIUM	.5		.524	mg/L	104.8	
CV01	Q805184		CHROMIUM	.5		.514	mg/L	102.8	
CV01	Q805187		CHROMIUM	.5		.511	mg/L	102.2	
CV01	9805190		CHROMIUM	.5		.531	mg/L	106.2	
CV01	Q805193		CHROMIUM	5		.543	mg/L	108.6	
CV01	9805196		CHROMIUM	.5	1	.542	mg/L	108.4	.]
CV01	9805199		CHROMIUM	.5		.513	mg/L	102.5	
CV01	Q805202		CHROMIUM	.5		.513	mg/L	102.6	
CV01	Q805205		CHRONIUM	.5		5	mg/L	100	
CV01	9805208		CHROMIUM	.5		.488	mg/L	97.6	
CV01	9805211		CHROMIUM	.5		.524	mg/L	104.8	
CV01	9805214		CHROMIUM	.5	1	.52	mg/L	104	<u>.</u>
CVOI	9805217		CHROMIUM	.5		.535	mg/L	107	
CV01	9805220		CHROMIUM	.5		.537	mg/L	107.4	
UP02	9791285	A292246	CHROMIUM	.111	- 441.418.419.419.419.419.419.419.419.419.419.419	.112	mg/L		5
CV	9805204		CHROMIUM	2	1	2	mg/L	100	
LA01	Q805206		CHROMIUM			< .02	mg/L		1
cs	9791281		CHROMIUM	2		1.73	mg/L	86.5	
LA02	9791282	NA	CHROMIUM			< 0.004	mg/L		
AMPLE	A292246		See Certificate of Analysis					.,	
CY	9805207		CHROMIUM	2		2.02	mg/L	101	
LA01	9805209		CHROMIUM			< .02	mg/L		<u> </u>
DL01	9805222		CHROMIUM	1		.118	mg/L	118	

^791285 NOTE: * SAMPLE CONCENTRATION AND DUPLICATE CONCENTRATION DIFFERENCE OF < 1 MULTIPLIED BY DETECTION LIMIT.

Test: M610.5.0



Notes

Less Than Lower Detection Limit

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U.S. EPA - CIP

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

			-	
Lab Mame: He	ritage Labs	Contract:	Barresthank	ury COTM-I
Lab Code: <u>WA</u>	Case No.:	<u>VA</u> sas no.:	NA spa	No.: NA
sow No.: NA				
:	EPA Sample No.	Lab :	Sample ID.	
	MODELLE STATE OF THE STATE OF T	 /	129 2240	
	and the same of th		246 TELP	
			7-4	.*
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		Annual Control of the		

	***************************************	entitude:		
Were ICP intere	lement corrections a	و المحاد المحاد		10
				Yes/No
77 \C2-#6TF	ound corrections app. e raw data generated	L - e		Yes/No
application	n of background corr	ections?		Yes/No
Comments:				
N				
*		ASC	10000000	
than the conditi	this data package is he contract, both te ions detailed above.	cuurcanth and to	c completenes	s, for ct
diskette has he	ackage and in the comen authorized by the rified by the follow	mbnrer-Leadaple (data submitte ger or the Ma	d on nager's
Signature:		Name:		\
Date:	- South angus the grant department of the south and the so	Title:		
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7901 West Morris Street Indianapolis, IN 46231 Phone: 317 243-0811 FAX: 317 243-0360

CASE NARRATIVE METALS SECTION

SAMPLE # A2922404246

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH NO MODIFICATIONS.

Steven Endusey 10-19-93

INORGANIC SECTION LEADER

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INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

								•		
b Name:	He	ritage	Labs		. Co	ontract:				
b Code:	MA	<u>L</u>	Case N	lo.: _	NA	SAS No	· : _	NA	SDG No	
	1		Conc	entra	tion Un	its: ug/	'L			
Analyte	W O		l Calibr	ation		Contin	uing	Calibrat	ion	
	M	True	Found	%R	True	Found 1			₹R 2	
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Lithiom Stroction Tin	-	500	532	706	2800	1990		2000		A

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

ab Name: He	ritage	Labs Case N		Co	ontract:				
ab Code: NA	to	Case N		<u> </u>					
		,	o.: _	NA	SAS No	o.:	NA s	SDG N	0.:
		Conc	entra	tion Un	nits: ug/	′L			
Analyte W O M N	Initial True		ation %R	True	Found	&R	Calibrat Found	ion %R	M
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Lithiom Strontium Tin Melydenum Titonium				2000	2020	701	2	2	fi -

U.S. EPA - CLP INORGANICS

BLANKS

ab Name:			Cas	e No.:		wat	ور (ن	SDG NO L) <u>TCL</u> Kg)	3	N
Analyte	M M M	Initia Calib. Blank	1	······································	 Calibra (vg	 <u></u>		Prep. Blank	C	H
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Lithium Strontium Tin Maydenum Titanium										

FORM V _ - LCIN

U.S. EPA - CLP INORGANICS

DUPLICATES

				DOT LITC.	• • •	ميده مسط			EPA	SA	MPLE
Name: H		zae	Labs	Westerland		Contract:			AZO	72	246
Code: <u>NA</u>		(Case No.:	NA		SAS No.	: <u>\</u>	<u>/A</u>	SDG N	lo.	• /
	WI		Concentra	ation (Jn	its:	uaton(u Koloĝ	ngika) —	LP		
Analyte	1	Control Limit		(S)	c	Duplicate		R	PD	Q	м
Aluminum	-				_						
Antimony -	-				_					-	
Arsenic	- -				_					1-1	
Barium				 .	_						
Beryllium	_ _			·	_	4-0-00-00-00-00-00-00-00-00-00-00-00-00-		_			
CadmiumCalcium	_ .				-		-	-			
Chromium	- -										
Cobalt	- -	 -	120		_	121		-	T		
Copper	- -				_	101		-			
Iron	- -				_		-		·		
Lead	- -							-		 .	
Magnesium	- 4							*			
Manganese	- -				_			•			
Mercury	_ -				_					- -	
Nickel					_			• • • • • • • • • • • • • • • • • • • •	-		
Potassium					_						
Selenium_	_ _				-					- -	
Silver					-					- -	
Sodium	. _				-					_ -	-
Thallium					-					_ -	
Vanadium -	_				-		_				
Zinc	- _			-	• •		_				_]
Strontium	- -				1		-			_ _	
	.				1	<u> </u>		ļ		_ _	
Melvedgrum	.				1	<u> </u>	 			_ _	
Titoxium	!				1					_ _	_
ייזטאוטא				l	1 -		!	-		_ _	_
									*	***************************************	

FORM VIII _ - LCIN

* control limit is 20% unless noted

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC.	Received 14-0CT-93	Lab ID A293259
1 7901 W. MORRIS ST. 1 NDIANAPOLIS, IN 46231	Complete 25-0CT-93	PO Number VERBAL
(317)243-8305	Printed 26-0CT-93	Sampled 14-OCT-93 14:45

Sample Description

SAMPLE I.D.: 10-14A

DESCRIPTION: WET GRINDING DUST

LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN

Analys	TOTAL SOLIDS EPA 160.3 Analyst: B. PRIDEMORE Analysis Date: 18-0CT-93 Test: G401.7.0 Reviewer: B. SHRAKE Review Date: 20-0CT-93 File ID: 3527-3528 Run: R199863											
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD			
DUP01	Q806401	A293154	SOLIDS	98		98	Percent		0			
LCS01	0806400		SOLIDS	10.2989		10.2983	Percent	100				
SAMPLE	A293259		See Certificate of Analysis		,	***************************************						
LCS01	Q806402		SOLIDS	9.6797	1010110101010101010101010101010101010101	9.6787	Percent	100	110000000000000000000000000000000000000			

Analys Review	t : A. STOC er: D. CZER	KBURGER Iny	Rev	/190 sis Date: 21-0CT-93 Instrum lew Date: 25-0CT-93 File ID (LEACHATE) SW846-3010	: 026160		Test: M610. Run: R2001		
Pre	p: TOX C	HAR LEAC	HING PROCEDUR	É (TCLP METALS ONLY)	SW846-13				
QC Type	Identifier	\$	Parameter	True/Sampl	Spike Val	1	Units	% Rec	RPD
′01	9809224		CHROMIUM	.5	·	.507	mg/L	101.4	
√01 د	9809297		CHROMIUM			.515	mg/L	103	
ICV01	Q809300		CHROMIUM			.52	mg/L	104	
1CV01	9809303		CHROMIUM	.5		.522	mg/L	104.4	
1CV01	9809306	[CHROMIUM	.5		.525	mg/L	105	
10001	Q809309		CHROMIUM	5		.516	mg/L	103.2	
ICV01	Q809312		CHROMIUM	.5		.508	mg/L	101.6	
DUP02	Q804527	A293590	CHROMIUM	.065		.076	mg/L		15.6
CDL01	9809295		CHROMIUM	.1		.106	mg/L	106	
CCV	9809299		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	Q809301		CHROMIUM			< .02	mg/L		
LCS	Q804523		CHROMIUM			.39	mg/L	97.5	
BLA02	0804524		CHROMIUM			< .02	mg/L		1
SAMPLE	A293259		See Certificate of	Analysis					
CCV	9809302		CHROMIUM	2		2.03	mg/L	101.5	<u> </u>
BLA01	9809304		CHROMIUM			< .02	mg/L		
CDL01	Q809314		CHROMIUM	_1		.105	mg/L	105	

	Notes
<	Less Than Lower Detection Limit

Quality Assurance Officer:

HI Bruck

QUALITY ASSURANCE REPORT

Service Location HERITAGE LABORATORIES, INC.	Received 14-OCT-93	Lab ID A293258
O1 W. MORRIS ST.	Complete 25-OCT-93	PO Number VERBAL
(317)243-8305	Printed 26-OCT-93	Sampled 14-OCT-93 14:40

Sample Description

SAMPLE I.D.: 10-14B

DESCRIPTION: DRY GRINDING DUST LOCATION: HOOSIER SPLINE BROACH CORP, KOKOMO, IN

Analys	L SOLIDS it: B. PRIC wer: B. SHRA	EMORE).3 Analysis Date: 18-OCT- Review Date: 20-OCT-		: 3527-3528		st: G401.7.0 un: R199863		
QC Type	Identifier Q806401		Parameter SOLIDS	True/Sampl 98	Spike Val	Observed 98	Units Percent	% Rec	RPD 0
LCS01 SAMPLE	9806400 A293258		SOLIDS See Certificate of Analysis	10.2989		10.2983	Percent	100	
LCS01	Q806402		SOLIDS	9.6797		9.6787	Percent	100	

Analys Review Prej	it : A. STO ver: D. CZE/ p: FAA C	CKBURGER RNY IR ICP AC		te: 21-001-93 Instrum te: 25-001-93 File ID CHATE) SW846-3010 LP METALS ONLY)	: 026160 A	111	Test: M610. Run: R2001		
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	0bserved	Units	% Rec	RPD
1	9809224		CHROMIUM	.5		.507	mg/L	101.4	
16701	9809297		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q809300	Ì	CHROMIUM	.5		.52	mg/L	104	<u></u>
1CV01	9809303		CHROMIUM	.5		.522	mg/L	104.4	
ICV01	Q809306		CHROMIUM	.5		.525	mg/L	105	.]
ICV01	Q809309		CHRONTUN	5		.516	mg/L	103.2	
1CV01	Q809312		CHROMIUM	.5		.508	mg/L	101.6	
DUP02	Q804527	A293590	CHROMIUM	.065		.076	mg/L		15.6
CDL01	9809295		CHROMIUM	.1		.106	mg/L	106	
CCV	9809299		CHROMIUM	2		2.03	mg/L	101.5	
BLA01	9809301		CHROMIUM			< .02	mg/L		
LCS	9804523		CHROMIUM	4		-39	mg/L	97.5	
BLA02	Q804524		CHROMIUM			< .02	mg/L		1
SAMPLE	A293258		See Certificate of Analy	/S18		ļ. ·		1 1 1 1 1 1 1 1 1 1 1	4
CCV	9809302		CHROMIUM	2		2.03	mg/L	101.5	<u> </u>
BLA01	9809304		CHROMIUM			< .02	mg/L		
CDL01	Q809314		CHROMIUM	.1		.105	mg/L	105	<u> </u>

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		Notes	
	an Lower Detection Limit	The second secon	

Quality Assurance Officer:

Last Page 1

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October 22, 1993 metals

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab : Hame: Heritage Labs	Contract: Barner Harbuy (6+M-1)
Lab Code: <u>NA</u> Case No.: _	\underline{NA} sas no.: \underline{NA} sdg no.: \underline{Nk}
sow No.: NA	
EPA Sample No.	Lab Sample ID.
	A293258 TCLP
	259
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	distant distan
	.
Were ICP interelement corrections a	applied? Yes/No
Were ICP background corrections applications	i hefore
application of background cor	rections? Yes/No
Comments:	
I certify that this data package is conditions of the contract, both to	
hardcopy data package and in the co	Release of the data contained in thi
diskette has been authorized by the designee, as verified by the follow	Supplier-readable data submitted on Laboratory Manager or the Manager's ving signature.
Signature:	Name:
Date:	Title:
	\

EMS LABORATORIES, INC.

HERITAGE _____

7901 West Morris Street Indianapolis, IN 46231 Phone: 317 243-0811 FAX: 317 243-0360

CASE NARRATIVE METALS SECTION

SAMPLE # <u>A293528-529</u>

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH NO MODIFICATIONS.

Steven / Endergen 10-22-5

INORGANIC SECTION LEADER

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INORGANICS

				AND CON							
Lab	Name:	He	r:12ae	Labs	70 h	Co	ntract:				
Lab	Code:	<u>AV</u>	_	Case No	o.: _	NA	SAS No		MA s	DG No	.: <u>^</u>
							its: ug/				
	Analyte			Calibra	ation		Contin	uing	Calibrat	ion	
		M	True	Found	₹R	True	Found 1	%R 1	Found 2	ಕಿR 2	м
	Aluminum_ Antimony	_				48 9/- 39					
	Arsenic Barium	_							, , , , , , , , , , , , , , , , , , ,		
	Beryllium Cadmium	_									
	Calcium_ Chromium_	_	500								
	Copalt	_	500	<u> </u>	101	2000	2030	102	2030	702	Æ
	Copper										
	Lead Magnesium	_					4.				
	Manganese	_									
	Mercury Nickel	-									
	Potassium						***				
	Selenium_ Silver	_			***************************************						

Titonium

Sodium
Thallium
Vanadium
Zinc
Lithium
Stratium
Tin

Molublenum

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Na:	me:	10 He	ritage	Labs		Cor					
Co	de:/	YM	_	Case N	o.: _	<u> </u>	SAS No	·:	VA s	EDG No	٥.:
T				Conc	entra	tion Un:	its: ug/	L			
Aı	nalyte	W	Initial	Calibr	ation		Contin	uing	Calibrat	ion	
		M	True	Found	%R	True	Found 1		Found 2	åR 2	
Alı	lminum	<u> </u>						. ———		4	
Ant	timony -	1-									- .
Ars	senic [—]	-		·							-
	rium		-								
Bei	ryll ium		-								
Cac	lmium_			 							
Cal	lcium									•	
Chi	comium_					2000	2420			-	
	oalt						2030	105			
Cor	pper	_									_
	nc	_						<u> </u>		-	_
	1d	_								-	_
Mac	nesium	-									_
mar	nganese	_									- .
mei	cury_	-									- .
	assium	-					MT				- .
COL	-assium Lenium	-									- .
261	lver	_									- ∏.
277	lium	-								-	- .
	llium	-									- -
Var	adium	-									- .
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U.S. EPA - CLP INORGANICS

BLANKS

Name: He	ritage La	<u>bs</u>	Contra		_	
code: NA	_ Ca	se No.: _		INICH C	1001 TOOL	<u> </u>
		Concentra	cion Units:	ug/LSolid (mg/kg)	·
Analyte OMN	Initial Calib. Blank C		ing Calibra	ation Blanks L) C 3	Prep. Blank	M
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Lithium Strontiom Tin Mdyddenum Titanium						

FORM V _ - LCIN

U.S. EPA - CLP INORGANICS

DUPLICATES

ame: H						Contract: _			A29	134	⊃⊃(
ode: <u>IV M</u>	×	Ca	ase No.:	<u> </u>		SAS No.	: <u>\</u>	<u> </u>	SDG N	o.	9 40
	1		Concentra	ation	Ŭп	its:	uaten(v Solid(n	911) <u>TCI</u>	P		
Analyte	M M N	Control Limit	Sample	ís)	C	Duplicate		RI	PD	Q	м
Aluminum	-										
Antimony	-		·					_			
Arsenic	_				-			_			
Barium	-				_	ļ 		_			
Beryllium	_				-			_			
Cadmium	_			·	-				- Commence of the commence of		
Calcium_					_						
Chromium			65					_			
Cobalt					-	76		_	<u> </u>		
Copper								_			
Iron	_			· · · · · · · · · · · · · · · · · · ·	—						
Lead		/			_						_
Magnesium	-										
Manganese	-1		- <u> </u>	,							-
Mercury			··· · · · · · · · · · · · · · · · · ·		-						-
Nickel	-	-			_						***********
Potassium			or		_						-
Selenium	-				_						***************************************
Silver -	-1	-	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		_						į
Sodium	-				_				İ		C
Thallium	-				_				1		مسجسه
Vanadium	- -		**************************************	<u> </u>	_				ļ	-	
Zinc -	- -	-	:		_				Î		
Lithium	- -				_				1	-	
Strontium	- -				_					·	
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FORM VIII _ - LCIN

* control limit is 20% unless noted

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC.	22-0CT-93	A293951
901 W. MORRIS ST.	Complete	PO Number
INDIANAPOLIS, IN 46231	05-NOV-93	VERBAL
(317)243-8305	Printed	Sampled
	08-NOV-93	20-0CT-93 15:13

Sample Description

DESCRIPTION: WET GRINDING DUST

SAMPLE I.D.: 10-20A

LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

TOTA	L SOLIDS	EPA 160	.3						
Analys	it: B. PRIC	EMORE.	Analysis Date				st: G401.7.)	
Review	er: P. ANDE	RSON	Review Date	: 27-0CT-93 File ID	: 3538-3540	R	un: R200545		,
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
DUP01	Q811640	A293882	SOLIDS	97	.,	97	Percent		0
1CS01	Q811639		SOLIDS	9.6045		9.604	Percent	100	
SAMPLE	A293951	ļ	See Certificate of Analysi	is					
LCS01	Q811643		SOLIDS	12.6553		12.6552	Percent	100	***************************************

CHROMIUM FAA (1 POINT MSA) SW846-7190

Analyst : A. STOCKBURGER Analysis Date: 01-NOV-93 Instrument: FAA Test: M610.5.0

Reviewer: D. CZERNY Review Date: 03-NOV-93 File ID: 026274
Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A
Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 Run: R201140

QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	Observed	Units	% Rec	RPD
'01	Q816576		CHROMIUM	-5		.54	mg/L	108	
ICV01	Q816580		CHROMIUM	.5		.533	mg/L	106.6	
ICV01	Q817315		CHROMIUM	.5		.51	mg/L	102	
1001	Q817318		CHROMIUM	-5		.492	mg/L	98.4	
I CVO1	Q817344		CHROMIUM	.5		.514	mg/L	102.8	<u> </u>
ICV01	Q817347		CHRONIUM	5		.496	mg/L	99.2	
ICV01	Q817350		CHROMIUM	.5	ļ	.545	mg/L	109	
ICV01	Q817353		CHROMI UM	.5		.542	mg/L	108.4	
ICV01	Q817356		CHROMIUM	.5		.508	mg/L	101.6	
ICV01	Q817359		CHROMIUM	5		.509	mg/L	101.8	
ICV01	9817365		CHROMIUM	.5		.515	mg/L	103	
ICV01	Q817368		CHROMILM		111111111111111111111111111111111111111	.497	mg/L	99.4	
ICV01	Q817371		CHROMIUM	.5		.483	mg/L	96.6	
DUP02	0809855	A293951	CHROMIUM	.054		.053	mg/L		1.9
CDL01	Q816578		CHROMIUM	.1		.111	mg/L	111	
CCA	9816579		CHROMIUM	2		2.04	mg/L	102	
BLA01	Q816581		CHROMIUM	,		< .02	mg/L		
LCS	Q809851		CHROMIUM	2		2	mg/L	100	
LCS	Q809851	*******	CHROMIUM	2		1.87	mg/L	93.5	
BLA02	9809852		CHROMIUM			< .02	mg/L		
BLA02	9809852		CHROMIUM			.005	mg/L		
SAMPLE	A293951		See Certificate of Analysis						
CCV	Q817314		CHROMIUM	2		2.03	mg/L	101.5	
BLAD1	Q817316		CHROMIUM .			< .02	mg/L		
CDL01	Q817373		CHROMIUM	.1		.079	mg/L	79	1

1				N	otes	1	1
L	Less Than Lower Detection Limit) (<u> </u>		\perp	/
	/	17		7	· · · · · · · · · · · · · · · · · · ·	/	

Quality Assurance Officer:

QUALITY ASSURANCE REPORT

Service Location	Received	Lab ID
HERITAGE LABORATORIES, INC.	22-0CT-93	A293956
701 W. MORRIS ST.	Complete	PO Number
INDIANAPOLIS, IN 46231	05-NOV-93	VERBAL
(317)243-8305	Printed	Sampled
	08-NOV-93	20-0CT-93 15:05

Sample Description

DESCRIPTION: DRY GRINDING DUST SAMPLE I.D.: 10-20B LOCATION: HOOSIER SPLINE BROACH, KOKOMO, IN

Analys	L SOLIDS t: B. PRID er: P. ANDE	EMORE	.3 Analysis Date: 25-OCT-9 Review Date: 27-OCT-9		: 3538-3540		st: G401.7.0 un: R200545)	
QC Type	Identifier Q811640	Į.	Parameter SOLIDS	True/Sampl 97	Spike Val	Observed 97	Units Percent	% Rec	RPD 0
LCS01 SAMPLE	Q&11639 A293956		SOLIDS See Certificate of Analysis	9.6045		9.604	Percent	100	
LCS01	Q811643		SOLIDS	12.6553		12.6552	Percent	100	

CHROMIUM FAA (1 POINT MSA) SW846-7190 Analyst: A. STOCKBURGER Analysis Date: 01-NOV-93 Instrument: FAA Test: M610.5.0 Reviewer: D. CZERNY Review Date: 03-NOV-93 File ID: 026274 Run: R201140 Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311									
QC Type	Identifier	Source	Parameter	True/Sampl	Spike Val	0bserved	Units	% Rec	RPD
71	9816576		CHROMIUM	.5		.54	mg/L	108	
ICV01	9816580		CHROMIUM	.5		.533	mg/L	106.6	
ICV01	Q817315		CHROMIUM	.5		-51	mg/L	102	l
1CV01	9817318		CHROMIUM	.5		.492	mg/L	98.4	
1CV01	Q817344		CHROMIUM	.5		.514	mg/L	102.8	
ICVOI	Q817347		CHRONTUN	.5		.496	mg/L	99.2	
ICV01	Q817350		CHROMIUM	.5		.545	mg/L	109	
ICV01	Q817353		CHROMIUM	.5		.542	mg/L	108.4	
ICV01	Q817356		CHROMIUM	.5		.508	mg/L	101.6	
ICV01	Q817359		CHROMIUM	5		.509	mg/L	101.8	
ICV01	9817365	*************************	CHROMIUM	.5		.515	mg/L	103	
ICV01	9817368		CHROMIUM	.5		.497	mg/L	99.4	
ICV01	Q817371		CHROMIUM	.5		.483	mg/L	96.6	ļ
DUP02	Į.	A293951	CHROMIUM	.054		.053	mg/L		1.9
CDL01	Q816578		CHROM I UM	.1		.111	mg/L	111	ļ
CCA	Q816579		CHROM1UM	2		2.04	mg/L	102	
BLA01	Q816581		CHROMIUM		v 2.2	< .02	mg/L		
LCS	0809851	1	CHROMIUM	2		2	mg/L	100	
LCS	Q809851		CHROMIUM	2		1.87	mg/L	93.5	ļ
BLA02	9809852	***************************************	CHROMIUM			< .02	mg/L		1
BLA02	Q809852		CHROM I UM			-005	mg/L		
SAMPLE			See Certificate of Analysis	_				(
CCV	Q817314		CHROMIUM	5		2.03	mg/L	101.5	
BLA01	Q817316		CHROMIUM			< .02	mg/L		
CDL01	Q817373		CHROMIUM		<u> </u>	.079	mg/L	79	

		,			Notes		
<	Less Than Lowe	r Detection	Limit	\triangle			
			17/	7.7	17		

Quality Assurance Officer:





U.S. EPA - CIP

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab : lame: Heritage Lab	s C	Contract: &	most tanken	1 (GAM-1)
Lab Code: <u>NA</u> Case	3 No.: /VM	SAS No.:/	<u>VA</u> six	3 No.: <u> </u>
SOW No.: <u>NA</u>				
EPA Sample	No.	Lab Sam	ple ID.	
	- - -		956 TC	LP
	_ _	- ununicability (1997)		• .•
	_	4		
	nan	-		
	-	42000000000000000000000000000000000000		
	NAME AND ADDRESS OF THE PARTY O	eg modificocomicia — p. — p.	ppppmanamentodoki/Kontribot	
	445			
***************************************	Maga			
	ens.		22	
Were ICP interelement corr	ections applied	1?		Yes/No
Were ICP background correc	tions applied?			Yes/No
If yes-were raw data application of backgr	generated befor	.e		Yes/No
Comments:	- u144 - C-444 - C-C-4-01.	i an i		rea/ NO
I certify that this data p conditions of the contract than the conditions detail hardcopy data package and diskette has been authoriz designee, as verified by t	, both technica ed above. Rele in the computer	ally and for classe of the date- creadable date-	completenes ta contain a submitte	ss, for o ned in th ed on
Signature:	AMERICAN STREET, SPORTS AND STRE	Name:		
ate:		Title:		

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7901 West Morris Street Indianapolis, IN 46231 Phone: 317:243-0811 FAX: 317:243-0360

CASE NARRATIVE METALS SECTION

SAMPLE # A293951; A293956

THESE SAMPLES WERE ANALYZED USING THE NORMAL PROCEDURES WITH NO MODIFICATIONS.

Stevent Endergen 11-3-93

INORGANIC SECTION LEADER

INORGANICS

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Name:	4e	rilgae	Labs		Co	ntract: _			
Code:	AV		Case N	o.: _	NA	SAS No.	· :	VA s	DG No
W			Conc	entrai	cion Un	its: ug/I	<u>.</u>		
Analyte	Analyte O Initial			ation	, , , , , , , , , , , , , , , , , , ,	Continu	uing (Calibrat	ion
	M N	– – –	Found	₹R	True	Found 1	₹R l	Found 2	ŝR 2
Aluminum				·	·				
Antimony_	_			!				40	-
ArsenicBarium	_	.						***************************************	
Beryllium	-								-
Cadmium	-	ļ		ļ 					
Calcium	-	-	Date						
Chromium	-	500	540	108	2000				
Cobalt -	-		370	108	2000	2040	102	<i>20</i> 30	102
Copper		-		·					
Iron			<u></u>	İ	***************************************				
Lead									
Magnesium	_								-
Manganese	_			1				<u> </u>	-
Mercury_	-		2					-	
Nickel Potassium									•
Selenium	_								
Silver	-								-
Sodium	-								1
Thallium	_								
Vanadium	-	-							
Zinc -	1-		·						
Lithiom	-			-	·				
Strontium	-	-	<u></u>						
Tin	_		and the second of the second o				-		
Molybdenum	-								
Titonium	. —			1	l <u></u> .	j			

U.S. EPA - CLP INORGANICS

BLANKS

code: NA		Concentr	ration Unit	s: ug/LS	olid (mg/	K9)	
Analyte O	Calib.		nuing Calib	c 3	lanks C	Prep. Blank	C
Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Lithium Strontium Tin Mdydenum Titanium							

U.S. EPA - CLP INORGANICS

			'	DUPLICA	, ÷			,	LYA	SA	MPLI	E
Name: H						ontract:		STAGE-STAGE	AD	939	756	
Code: NA		<	Case No.:	NA	•	SAS No.:	λ/	<u>A</u> s	DG	No.	ø	Δ
_ · ·	1++		Concentra	ation U	'n	its: wa-	al (m	51L) <u>TCL</u> 51Kg)	2			
Analyte	Z Z O E	Contro:	Sample		С	Duplicate (f)) (RP	D	Q	м	
Aluminum_ Antimony_	_											
ArsenicBariumBeryllium												
Cadmium_ Calcium_ Chromium			120		-		-					
Cobalt			I SCU			122		2			_	
Lead Magnesium		4			-							
Manganese Mercury Nickel	_											
Potassium Selenium Silver					-			4				
Sodium Thallium												
Vanadium Zinc LAhium												
Strontium Tin Melvedgrum					-			***************************************				
Titonium					_1.					l_l.		

FORM VIII _ - LCIN

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